

The Chang'E-1 Topographic Atlas of the Moon

The Chang'E-1 Topographic Atlas of the Moon

2nd Edition 2016



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Preface

Since the end of the 1950s, a series of unmanned and manned lunar exploration activities have taken place. With the enhancement of China's overall national strength, the development of its technology and continuous technological breakthroughs in aerospace engineering and deep space exploration, China is qualified to carry out lunar exploration. On October 24, 2007, the first lunar probe-Chang'E-1 was successfully launched into space. It entered the earth-moon transfer trajectory on October 31 and successfully started to orbit the Moon on November 5. At 16:49 pm, November 20, the CCD stereo camera on the Satellite opened its "eyes", and began to scan the surface of the Moon. After several days of continuous imaging by integrating the multi-track data, the first lunar image from China's first lunar probe was mosaicked and issued on November 26, which marked the success of China's first lunar exploration. On September 28, 2009, The Global Chang'E-1 Digital Topographic Map was evaluated. The results showed that the topographic map had reached the international advanced level in data coverage, plane positioning accuracy, elevation accuracy and spatial resolution.

The Moon carries the dream of mankind for thousands of years. So far, dozens of lunar probes have been launched. In order to help unveil the mysteries of the Moon, scientists used telescopes and probes to obtain data, and produced a variety of lunar topographic maps.

Early lunar topography maps were mainly produced based on photos taken by satellites, such as the 1960 publication of Atlas Obratnoi Storony Luny (Atlas of the Far Side of the Moon) containing former Soviet Luna 3 spacecraft. In 1969, Lewis made The Times Atlas of the Moon, which divided the moon surface into 110 areas and included almost all the moon images (libration area not included) and contents of the Apollo 11 moon landing. In 1971, David Bowker and Kenrick Hughes, assembling about 675 planar images acquired by Lunar Orbiter, compiled the Lunar Orbiter Photographic Atlas of the Moon. This atlas was a lunar global map of the widest coverage including the near side and far side with the highest accuracy at that time, and became an essential reference book for workers in lunar science. In 1999, Eliason et al. produced the UVVIS 750 nm Basemap by using the Clementine 750 nm images. In 2004, Ben Bussey and Paul Spudis integrated Lunar Prospector data with Clementine data, and compiled The Clementine Atlas of the Moon. In 2007, Phillip used Luna 9 data to compile the The International

Atlas of Lunar Exploration. In 2010, The Chang'E-1 Image Atlas of the Moon was produced by Li Chunlai et al. (at 120 m resolution), which was an image atlas with the most complete coverage among products of equivalent resolution. In March, 2011, The Kaguya Lunar Atlas: The Moon in High Resolution, compiled by Motomaro Shirao and Charles A. Wood, used the HDTV (High Definition Television Camera, carried on the Kaguya) images to illustrate 100 of the Moon's most interesting landforms. On March, 15, 2011, JPL released the Wide Angle Camera (WAC, on board the Lunar Reconnaissance Orbiter) global mosaic comprised of over 1,500 lunar images acquired between November 2009 and February 2011. Up to now, JAXA (Japan Aerospace Exploration Agency) has made the TCOrtho (Terrain Camera Orthophoto) available, which was acquired by the Kaguya. On February 6, 2012, China National Defense Technology Industry Bureau published Chang'E 2 Global Map of the Moon at 7 m resolution – high resolution lunar global map of the broadest coverage so far; at the same time, it also published Chang'E -2 High Resolution Lunar Image Atlas. Aforementioned maps and atlas include images obtained by the satellite to show the morphology of the Moon vividly. With the development of the photogrammetry and laser ranging technology, it has become an important trend to use the topographic data to compile lunar topographic maps.

Lunar topographic map production began in the 1960s. In the following 50 years a large number of topographic maps had appeared. The first one is the 1:1000000 Lunar Astronautical Chart (LAC) Series, including 38 sheets, which were produced by ACIC (Aeronautical Chart Information Center, United States Air Force) from 1962 to 1967. The LAC portrayed lunar topography by shaded relief with a western illumination, approximate contours (300 meter interval), spot elevations, height differences between level features and crater depths. In 1964, 1:5000000 Topographic Lunar Series were published by ARMY MAP SERVICE, CORPS OF ENGINEERS. Currently, the intermediate and large scale topographic maps mainly employ ground-based telescope, lunar orbiter, and Apollo data. During 1965-1967, the Apollo Intermediate Chart Series, including 20 sheets of 1:500 000 lowlatitude topographic maps with Mercator projection based on ground-based telescope and Lunar Obiter data, was released by the ACIC. In 1971, the Large Scale Topophotomaps Series composed of 41 large-scale topographic atlas sheets, was published

by Defense Mapping Agency, Topographic Center. Based on data obtained by Apollo 15, the above series contains eight sheets of 1:10000, three sheets of 1:25000 and thirty sheets of 1:50000. During 1973–1980, The Lunar Topographic Orthophotmaps and Lunar Orthophotomaps Series, including 215 pieces of 1:250 000 maps, were edited by Defense Mapping Agency, Aerospace Center and Lawrence A. Schimerman. This Series is the first comprehensive and continuous mapping to be accomplished on the basis of Apollo Mission 15-17 mapping photographs. During 1976-1980, Defense Mapping Agency Aerospace Center compiled Lunar Shaded Relief (LSR) Series in low latitude area, including 11 sheets of 1:1000000 maps. Later, several editions of 1:5000000 topographic maps have been published by USGS. Shaded Relief Map of the Mare Orientale Area of the Moon was released in 1978. Shaded Relief Map of the Lunar Far Side, Shaded Relief Map of the Lunar Polar Regions, Shaded Relief Map of the Lunar Near Side were available in 1980, 1981 and 1992 respectively.

From the beginning of the 21st century, lunar exploration entered another thriving age. Space powers and international organizations embarked on lunar exploration activities aiming at returning to the moon. Launched lunar missions included SMART-1 of ESA, Selene (Kaguya) of Japan, Chang'E-1 and Chang'E-2 of China, Chandrayaan-1 of India, LRO, ARTEMIS and GRAIL of the USA. Planned missions include the Chang'E series of China, the Selene2 of Japan, the Luna Glob of Russia, the MoonLITE of the UK and the Google Lunar X-Prize funded by Google, etc. Data by this generation of lunar exploration missions have improved compared with the historical data in spatial coverage and resolution, and are expected to cast far-reaching influences on lunar cartography. In 2002, Roseik et al produced a new set of 1:10 million scale lunar maps (Clementine Colorcoded Shaded Relief Map) combining color-coded topography with shaded relief data and nomenclature, in which topographic data are from the Clementine laser altimeter (covering the Moon surface of 79°S-81°N) and photogrammetric data collected from Clementine UVVIS images. In March 2008, JAXA produced Lunar Topographic Map using KAGUYA (SELENE) LALT observation data with 1 km interval contours. Since November 2009, the Japan Aerospace Exploration agency (JAXA) has being releasing DOM (Digital Orthophoto Map) and DEM data with 7.4 meter resolution, obtained by the Terrain Camera. In the last month of 2010, NASA's Goddard Space Flight Center released LOLA Topographic Map, using Digital Evaluation Model (DEM) data obtained by LOLA at resolution of 30 meters. In November, 2011, Arizona State University in Tempe published the GLD100 (Global Lunar DTM 100 m) data with a pixel resolution of 100 meters and *Color Shaded Relief* map. The GLD100 was created by the evaluation data derived from images taken by Wide Angle Camera and altimetry data by LOLA. At present, the National Astronomical Observatories, Chinese Academy of Sciences (The Ground Application System of Lunar Exploration Program) is processing the Chang'E-2 CCD stereo camera data.

Following the publication of *The Chang'E-1 Image Atlas* of the Moon, *The Chang'E-1 Topographic Atlas of the Moon* is based on the lunar global DEM derived from the CCD stereo image data with digital photogrammetry. The spatial resolu-

tion of DEM in this *Atlas* is 500 m, with horizontal accuracy of 192 m and vertical accuracy of 120 m. This atlas uses color shaded relief map with contour lines to show the lunar topographic characters. The CE-1 topographic data can provide foundational information for the study of lunar topography, morphology, and geologic structures, as well as lunar evolution research.

The compilation of the Atlas was mainly organized and carried out by the National Astronomical Observatories of the Chinese Academy of Sciences (The Ground Application System of China's Lunar Exploration Program) and Sinomaps Press, making their best effort to meet the scientific, practical, and artistic requirements put forward by the Compiling Committee. However, room for improvement is believed to still exist.

Any criticism and correction on the Atlas is sincerely welcome.

This Atlas is an important research result of our Lunar Exploration Program. It is a collective product of the joint efforts of the five Systems of the Program, including the Spacecraft, the Launch Vehicle, the Launch Site, the Tracking, Telemetry and Control (TT&C) and the Ground Application Systems. It embodies the hard work of various personnel in technology, education, production, and management in the fields of aerospace engineering and topography & remote sensing. This Atlas is presented as a gift to the great of China's Lunar Exploration Program and space industry.

Compiling Committee of *The Chang'E-1 Topographic Atlas of the Moon*

February, 2012

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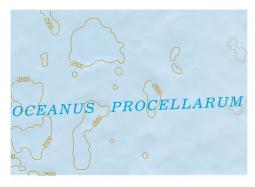
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Legend



Oceanus, Oceani



Mare, Maria



Lacus, Lacūs



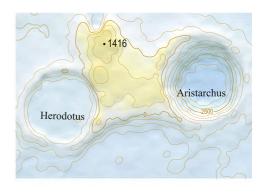
Planitia, Planitiae



Mons, Montes



Dorsum, Dorsa



Crater, Craters



Satellite Feature



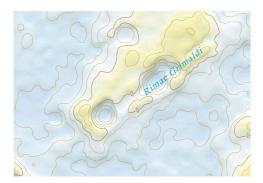
Catena, Catenae



Vallis, Valles



Promontorium, Promontoria



Rima, Rimae



Sinus, Sinūs



Palus, Paludes



■ Intermediate contour



Index contour

• 5035

Spot elevation

Part I Introduction of the CCD Stereo Camera

CCD Stereo Camera

CE-1's optical sensor is a three-line-array CCD push-broom camera. The camera is loaded on a big area array CCD detector, reading the 11st, 512nd, and 1013rd rows perpendicular to the direction of flight. The data are regarded as the front, nadir and back image arrays, of which the pixel is 512 columns, and the view angle between adjacent arrays is 16.7°. Based on the predetermined in-orbit flight parameters, the camera's scanning speed is set to be 11.89 f/s, to ensure that the satellite's three-line-array scanning can obtain consecutive image data on front, middle, and back angles (See in ▶ Fig. 1.1). The main specifications of three-line-array CCD stereo camera are shown in ▶ Tab. 1.1.

Characteristics of Orbits and Attitudes

The design parameters of CE-1 circumlunar orbits and attitudes are as follows (Tab. 1.2):

(1) Orbital data in operation

CE-1's actual dynamic range of orbit altitude is from 195.53 km to 202.07 km, with an average of 197.19 km; the dynamic range of orbital eccentricity is from 0.00017 to 0.012293, with an average of 0.006349; the dynamic range of orbital inclination is from 87.6° to 90.0°, with an average of 88.20°.



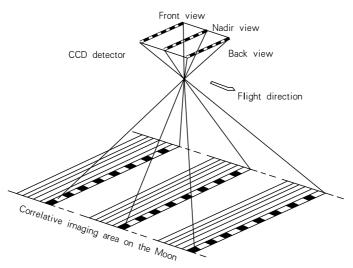
CCD Stereo Camera

(2) Attitude data in operation

The attitude is relatively stable: more than 95% of attitude values are less than 0.03° and standard deviation of the value of attitude angle to the Moon is less than 0.02°; 96% of the attitude change rate is less than 0.0016°/s; stability of yaw angles and roll angles in orbit coordinates is better than 0.003°/s (3 σ); stability of pitch angles is better than 0.008°/s (3 σ).

Data Acquisition and Coverage

Because of the adjustment of the orbit attitude, the maintaining of payloads, the global CCD image was finally fulfilled, after 4 covering cycles, in two operation periods, making the time phase of the image data inconsistent. During the first covering cycle, 228 tracks of data in areas of 70°N–70°S were acquired; in the second period, 247 tracks from 70°N–70°S and 17 tracks from the polar regions were acquired; and in the third period (till January 27, 2008), 14 tracks from 70°N–70°S and 58 tracks from the polar regions were acquired. In the second operation period starting from May 1, 2008. 6 tracks from 70°N–70°S were acquired, fulfilling the data coverage in 70°N–70°S. Data coverage of the polar regions were fulfilled on July 1.



■ Fig. 1.1 CCD stereo camera imaging process

■ Table 1.1 The main specifications of CCD stereo camera			
Name	Index		
Frame frequency	11.89 f/s		
Spectrum range	0.5 μm ~ 0.75 μm		
Radiometric resolution	8 bit		
Focal length	23.33 mm		
Pixel per linear array	512		
Size of pixel	14 μm×14 μm		
Relative aperture	F/5		
Adjacent angle between linear arrays	16.7°		
Time of exposure	3.2 ms, 7 ms, 20 ms and 84 ms		
MTF	≥0.2		
$S/N (\rho = 0.2 \theta = 60)$	≥100		
Imaging width above 200 (km)	L=60 km		
Baseline to height ratio	≥0.6		
Pixel spatial resolution (subastral point)	120 m		

■ Table 1.2 The design parameters of CE-1 circumlunar orbits and attitudes

CE-1 parameter	Value
Orbital altitude (km)	195.464±25
Inclination	90°±5°
Eccentricity	0
Orbital period (min)	127.164
Attitude control precision (three dimensional)	±1°(3σ)
Attitude change rate (three dimensional)	0.01°/s(3σ)

Part II Global Topographic Map of the Moon

Data Receiving

The Ground Application System is responsible for the acquisition of all the image data from CCD camera and other scientific data. Reception of data from Chang'E-1 adopts two radio antennas acquisition systems, i.e. the 50 m-antenna earth station in Miyun Station and 40 m-antenna earth station in Kunming Station. The two antennas adopt parallel working modes and receive the data synchronously to ensure the completeness of data. The data acquisition code rate is 3 Mbps, and satellite-ground link allowance is larger than 6 dB (BER < 10^{-6}).

Data Preprocessing

The production of this Atlas adopts data of three-linear-array. The preprocessing procedures include communication channel processing, data source package extracting and sequencing, duplicates removing, image frame format reforming, radiometric correction and photometric calibration.

Radiometric Correction

Radiometric correction aims to correct the systematic or random radiometric distortion in the raw data due to external factors in the process of data acquisition and transmission. Radiometric correction will eliminate or correct the radiometric distortion caused by radiometric errors. The correction includes dark current subtraction, relative calibration, absolute calibration and filling of missing linear array.

Photometric Calibration

Photometric calibration mainly refers to the correction of radiancy of the targets acquired by sensors due to parameters of solar irradiance angle, emergence angle, phase angle and solar distance. With photometric calibration, all the image data will be normalized into the same irradiance parameter, to eliminate the influence of different irradiance conditions on the brightness of the images.

Processing of the Lunar Global Topographic Data

The lunar global topographic data of Chang'E-1 were obtained by the digital photogrammetry of the three-line-array CCD stereo image data. The processing of the global data includes: data organization, image matching, three-line block adjustment, topographic data generation at block scale and topographic data mosaiking at globe scale.

Data Organization

In order to ensure the realization of data processing and the precision of processing results, in the processing of lunar global topographic data, the lunar surface is divided into 202 blocks. Each block spans latitude range of 14 degrees, including about 20 tracks of images. In each block, the original images are cut to ensure that the adjacent block images have lateral overlap (latitudinal direction) of 4 degrees and forward overlap (longitudinal direction) of 2 degrees.

Image Matching

The SIFT (Scale Invariant Feature Transform) and LSM (Least Squares Matching) methods are used to find the matching points in forward, nadir and backward view images. The image matching provides sparse and dense matching points for the block adjustment and DEM generation. Finally, in the three-dimensional digital photogrammetry workstation environment, the data processing technicians check and edit the above points one by one.

Three-Line Block Adjustment

Block adjustment through three-line block independent models is used for block adjustment and global block adjustment to provide processing parameters for the absolute orientation and seamless mosaic of lunar global topographic data.

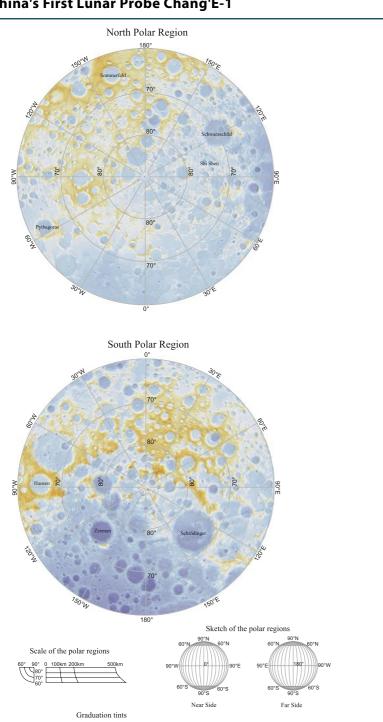
Topographic Data Generation at Block Scale

At first, the dense matching points and forward intersection method are employed to calculate the elevation, longitude and latitude coordinates of the matching points. Then, the elevation points are interpolated into DEM data of 500 m resolution by Triangulated Irregular Network (TIN). At last, according to the geometric position, the adjacent data are mosaicked into a block DEM data.

Topographic Data Mosaicking at Globe Scale

The global mosaic topographic data are stored with different projections. Mercator Projection with parallel of 35° is used in the range from 70°N–70°S and Azimuthal Projection with parallel of 70° in the range from 60° to the poles. After data quality check, the DEM data of every block are transformed under the same projection system. Subsequently, all of the projected data are mosaicked up. In the polar shadowed regions, the CCD camera can't obtain terrain information. Thus, laser altimetry data of CE-1 are used to fill in the "holes at the pole".

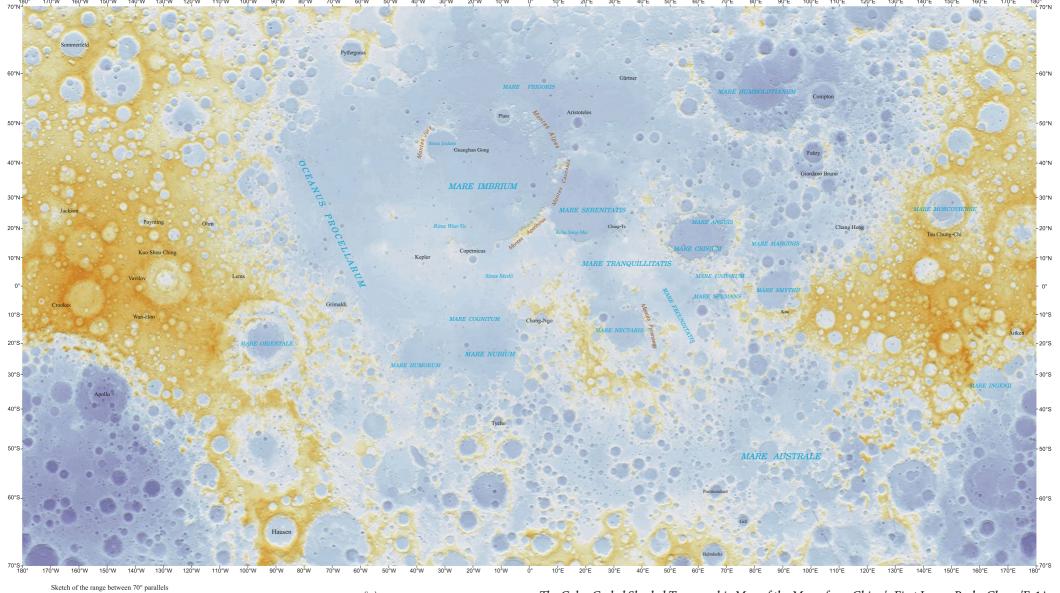
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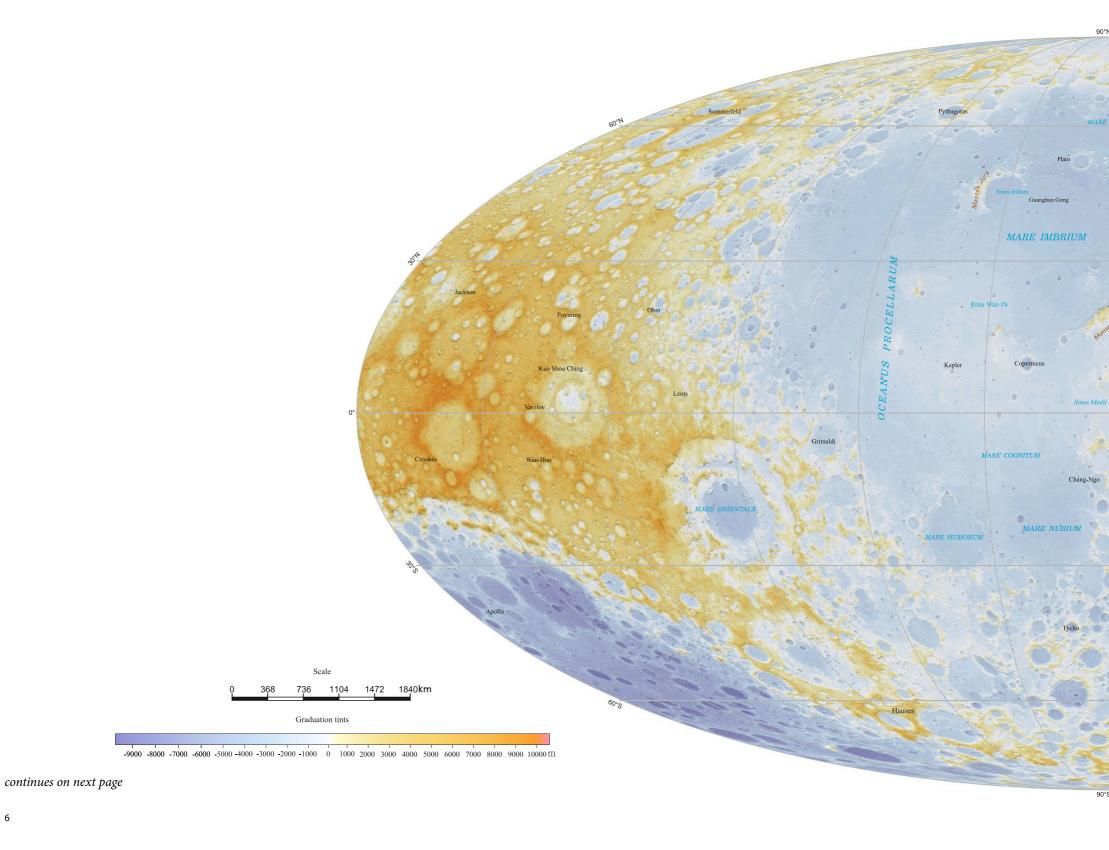
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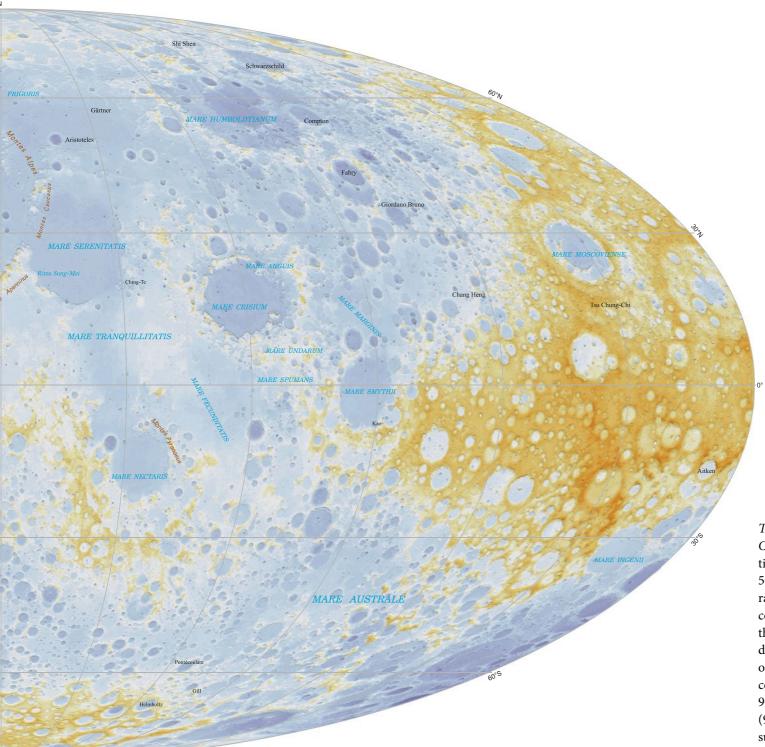
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Name	Lat.	Long.	Page
Aitken	16°48'S	173°24'E	148
Apollo	36°06'S	151°48'W	150
Aristoteles	50°12'N	17°24'E	44
Chang Heng	19°00'N	112°12'E	85
Chang-Ngo	12°42'S	2°06'W	118
Ching-Te	20°00'N	30°00'E	80
Compton	55°18'N	103°48'E	47
Copernicus	9°42'N	20°06'W	97
Crookes	10°18'S	164°30'W	109
Fabry	42°54'N	100°42'E	47
Gärtner	59°06'N	34°36'E	31
Gill	63°54'S	75°54'E	190
Giordano Bruno	35°54'N	102°48'E	65
Grimaldi	5°30'S	68°18'W	115
	44°7'N	19°31'W	42
Guanghan Gong			
Hausen	65°00'S	88°06'W	185
Helmholtz	68°06'S	64°06'E	190
Jackson	22°24'N	163°06'W	69
Kao	6°42'S	87°36'E	123
Kepler	8°06'N	38°00'W	96
Kuo Shou Ching	8°24'N	133°42'W	91
Lents	2°48'N	102°06'W	93
Mare Anguis	22°36'N	67°42'E	82
Mare Australe	38°54'S	93°00'E	162
Mare Cognitum	10°00'S	23°06'W	117
Mare Crisium	17°00'N	59°06'E	82
Mare Fecunditatis	7°48'S	51°18'E	121
Mare Frigoris	56°00'N	1°24'E	29
Mare Humboldtianum	56°48'N	81°30'E	32
Mare Humorum	24°24'S	38°36'W	136
Mare Imbrium	32°48'N	15°36'W	59
Mare Ingenii	33°42'S	163°30'E	166
Mare Marginis	13°18'N	86°06'E	103
Mare Moscoviense	27°18'N	147°54'E	87
Mare Nectaris	15°12'S	35°30'E	140
Mare Nubium	21°18'S	16°36'W	138
Mare Orientale	19°24'S	92°48'W	133
Mare Serenitatis	28°00'N	17°30'E	60
	1°18'N	87°30'E	103
Mare Smythii			103
Mare Spumans	1°06'N	65°06'E	
Mare Tranquillitatis	8°30'N	31°24′E	100
Mare Undarum	6°48'N	68°24'E	102
Montes Alpes	46°24'N	0°48'W	43
Montes Apenninus	18°54'N	3°42'W	78
Montes Caucasus	38°24'N	10°00'E	60
Montes Jura	47°06'N	34°00'W	42
Montes Pyrenaeus	15°36'S	41°12'E	141
Oceanus Procellarum	18°24'N	57°24'W	75
Ohm	18°24'N	113°30'W	72
Plato	51°36'N	9°24'W	43
Pontécoulant	58°42'S	66°00'E	190
Poynting	18°06'N	133°24'W	71
Pythagoras	63°30'N	63°00'W	27
Rima Sung-Mei	24°36'N	11°18'E	79
Rima Wan-Yu	20°00'N	31°30'W	77
Schrödinger	75°00'S	132°24'E	200
Schwarzschild	70°06'N	121°12'E	22
Shi Shen	76°00'N	104°06'E	22
Sinus Iridum	44°06'N	31°30'W	42
Sinus Medii	2°24'N	1°42'E	99
Sommerfeld	65°12'N	162°24'W	24
Tsu Chung-Chi	17°18'N	145°06'E	87
Tycho	43°24'S	11°06'W	174
Vavilov	0°48'S	137°54'W	111
Wan-Hoo	9°48'S	138°48'W	111
Zeeman	75°12'S	133°36'W	195
Eccilian	, 3 12 3	133 30 **	1,73

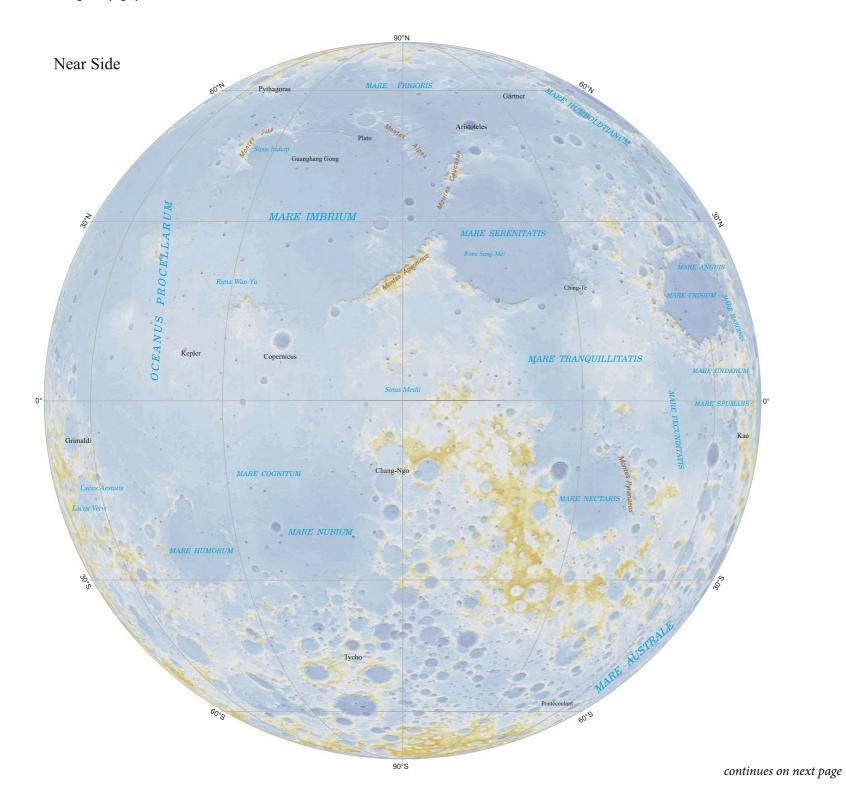


The Color Coded Shaded Topographic Map of the Moon from China's First Lunar Probe Chang'E-1 is made of the Digital Elevation Model (DEM) data, The space resolution of the DEM data is 500 m, with the horizontal accuracy 192 m and the vertical accuracy 120 m. The elevation information is represented by different colors (see the graduation tints). The areas of low altitude below the geoid are shown in blue tones, and those above the geoid in deep yellow tones. The lunar geoid is defined as a spherical surface of radius 1737.4 km. The Mercator projection, adopting in the 35° parallel of both south and north latitude, is used for the right part of the map (the rectangular image), including an area between 70° parallels. The left part of the map (the two pies) displays the polar regions of the Moon, covering the ranges of 60°N–90°N and 60°S–90°S respectively. The azimuth isometric projection, adopting in the 70° parallel, is used for the polar regions.

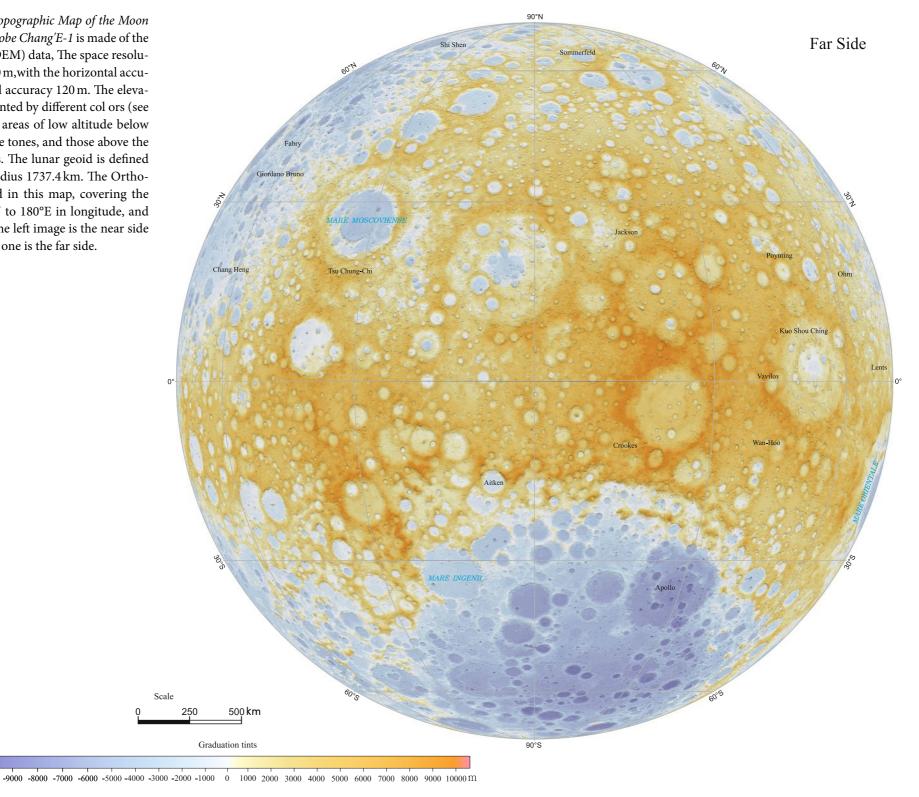




The Color Coded Shaded Topographic Map of the Moon from China's First Lunar Probe Chang'E-1 is made of the Digital Elevation Model (DEM) data. The space resolution of the DEM data is 500 m,with the horizontal accuracy 192 m and the vertical accuracy 120 m. The elevation information is represented by different colors (see the graduation tints). The areas of low altitude below the geoid are shown in blue tones, and those above the geoid in deep yellow tones. The lunar geoid is defined as a spherical surface of radius 1737.4 km. The Mollweide projection is used in this map, covering the whole Moon, from 180°W to 180°E in longitude, and 90°N to 90°S in latitude. In this map, the near side of the Moon (90°W–90°E) is on the center area and the far side is separately surrounding the near side.



The Color Coded Shaded Topographic Map of the Moon from China's First Lunar Probe Chang'E-1 is made of the Digital Elevation Model (DEM) data, The space resolution of the DEM data is 500 m, with the horizontal accuracy 192 m and the vertical accuracy 120 m. The elevation information is represented by different col ors (see the graduation tints). The areas of low altitude below the geoid are shown in blue tones, and those above the geoid in deep yellow tones. The lunar geoid is defined as a spherical surface of radius 1737.4 km. The Orthographic projection is used in this map, covering the whole Moon, from 180°W to 180°E in longitude, and 90°N to 90°S in latitude. The left image is the near side of the Moon, and the right one is the far side.



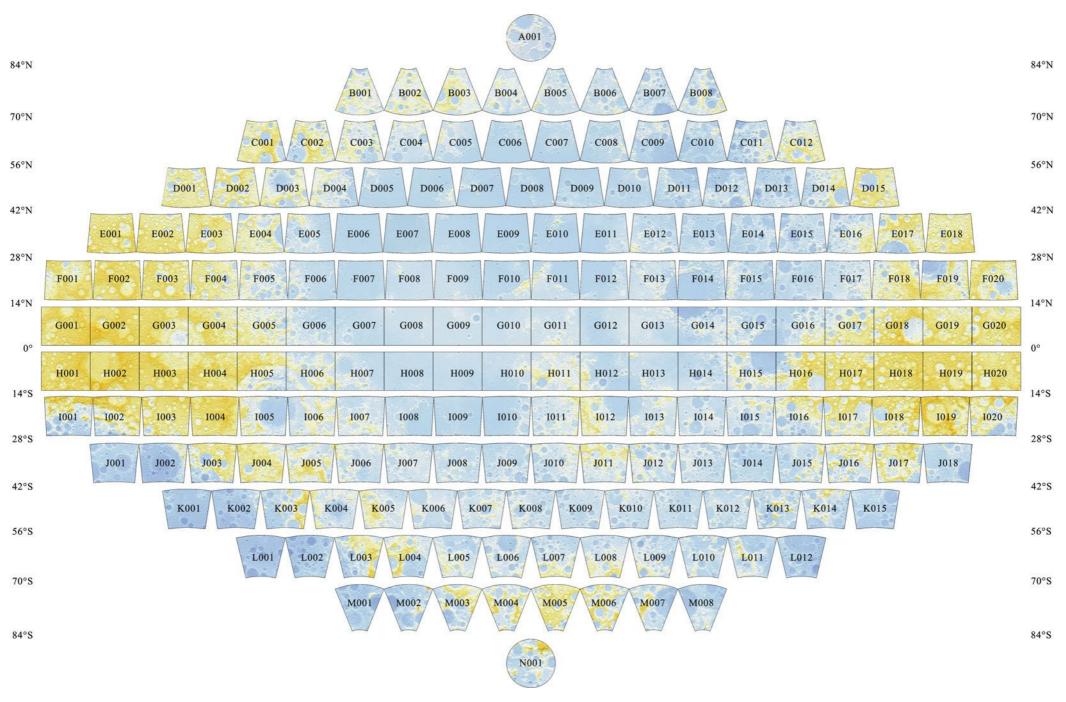
Part III Subdivision Topographic Maps of the Moon

The Chang'E-1 Topographic Atlas of the Moon and The Chang'E-1 Image Atlas of the Moon (published in Jun., 2010) use the same subdivision model and projections, which have 188 subdivisions. The subdivision model and projection parameters are described in the ■ Tab. 3.1. In order to facilitate the inquiry, the page number is marked on the index of the subdivision topographic maps, shown in page 12–13.

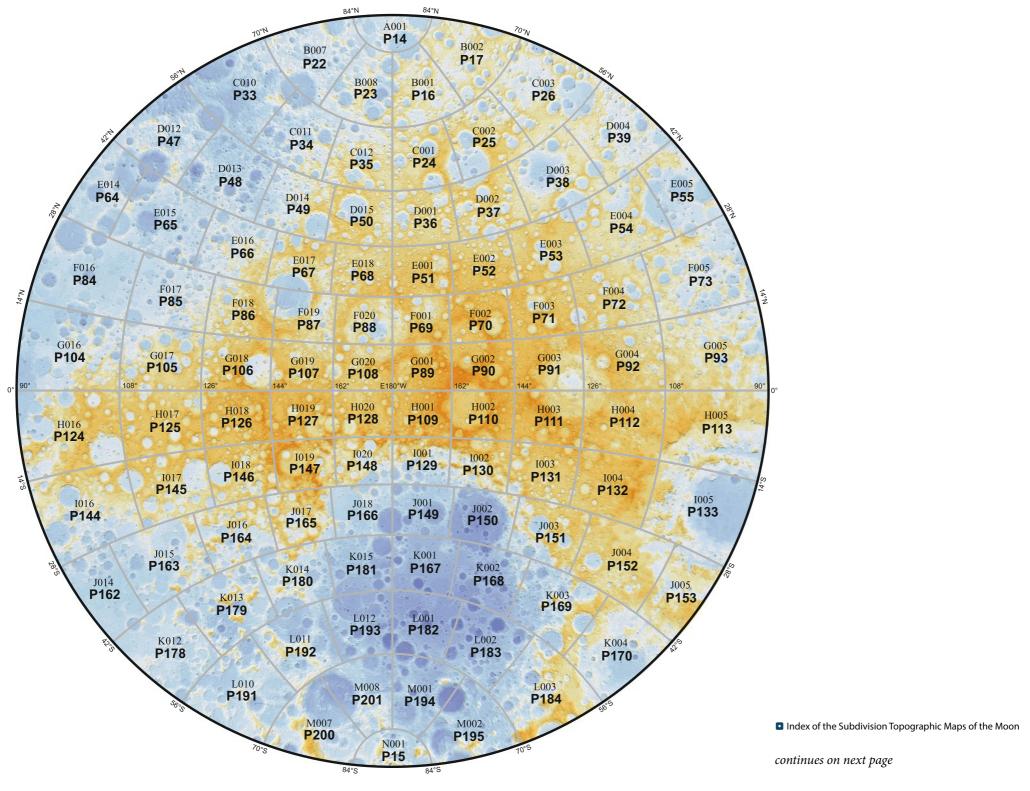
In the subdivision topographic maps, color coded shaded relief maps are used for the terrains of the lunar surface, and the contours to show the elevation information. In order to show the topographic features of the lunar surface accurately, the lunar topography is divided into five main types: deep mare, shallow mare, plains, hills and mountains. Therefore, elevation (encoding) color tables are designed according to the topographic types and placed at the bottom of the map. In the shaded relief maps, light comes from north with solar elevation angle of 60–70 degrees. The contours with 500 m intervals are extracted from DEM data. After cartographic generalization, the contours in brown are assigned the same scale as the shaded relief map to ensure matching with the latter. In addition, elevations of the highest and lowest points in each subdivision topographic map are marked out.

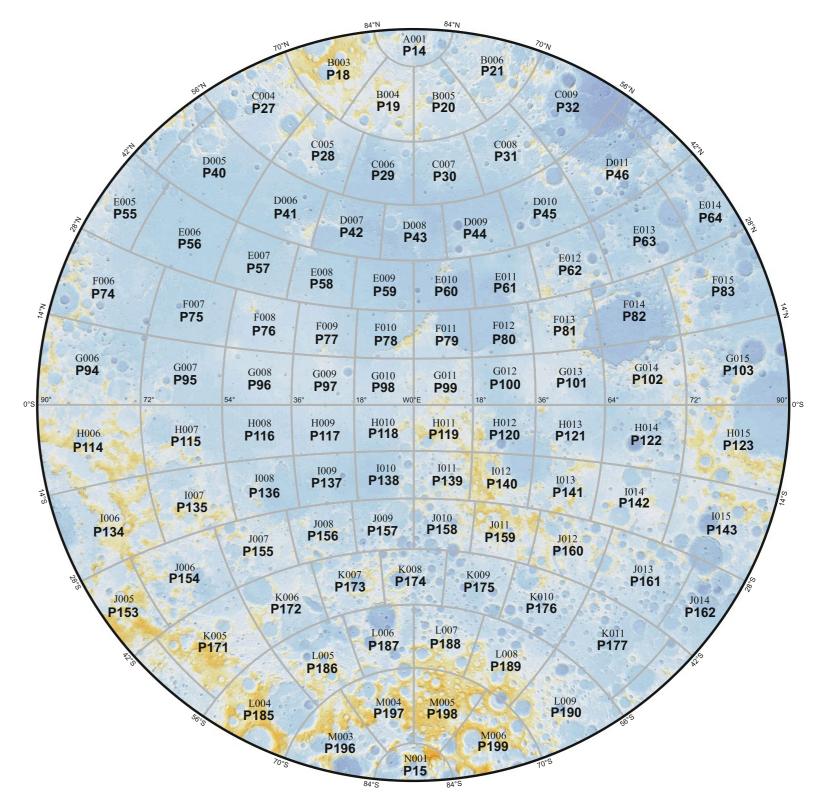
The main surface features with prominent topographic characteristics are annotated with 17 types of lunar location names, including Mare, Crater, Rima, shown in the legend. In order to help understand and find the Moon names, location, geometry, and page number of the lunar place names are described in the Appendix.

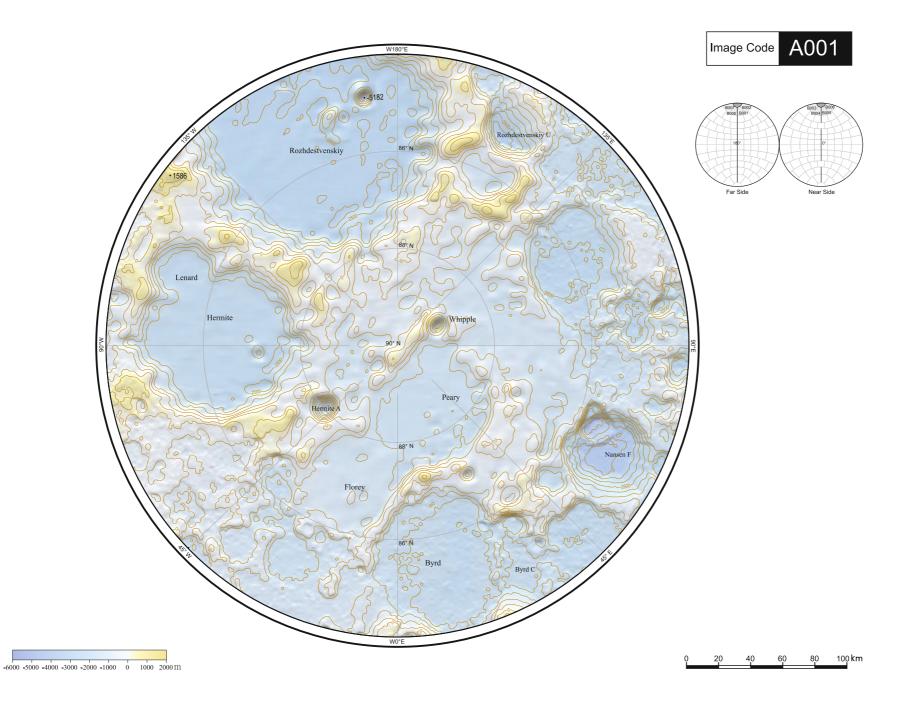
■ Table 3.1 Subdivision Scope and Coding of CE-1 Topographic Maps of the Moon					
Code	Latitude range	Longitude range	Projection	Central meridian	Standard parallel
A***	84°N-90°N	360°	Polar azimuthal projection	0°	90°N
B***	70°N-84°N	45°		Average value of the	77°N
C***	56°N-70°N	30°	Lambert conformal conic projection		63°N
D***	42°N-56°N	24°			49°N
E***	28°N-42°N	20°			35°N
F***	14°N-28°N	18°			21°N
G***	0°-14°N	18°	Mercator projection		7°N
H***	0°-14°S	18°			7°S
 ***	14°S-28°S	18°			21°S
J***	28°S-42°S	20°			35°S
K***	42°S-56°S	24°			49°S
L***	56°S-70°S	30°			63°S
M***	70°S-84°S	45°			77°S
N***	84°S–90°S	360°	Polar azimuthal projection	0°	90°S

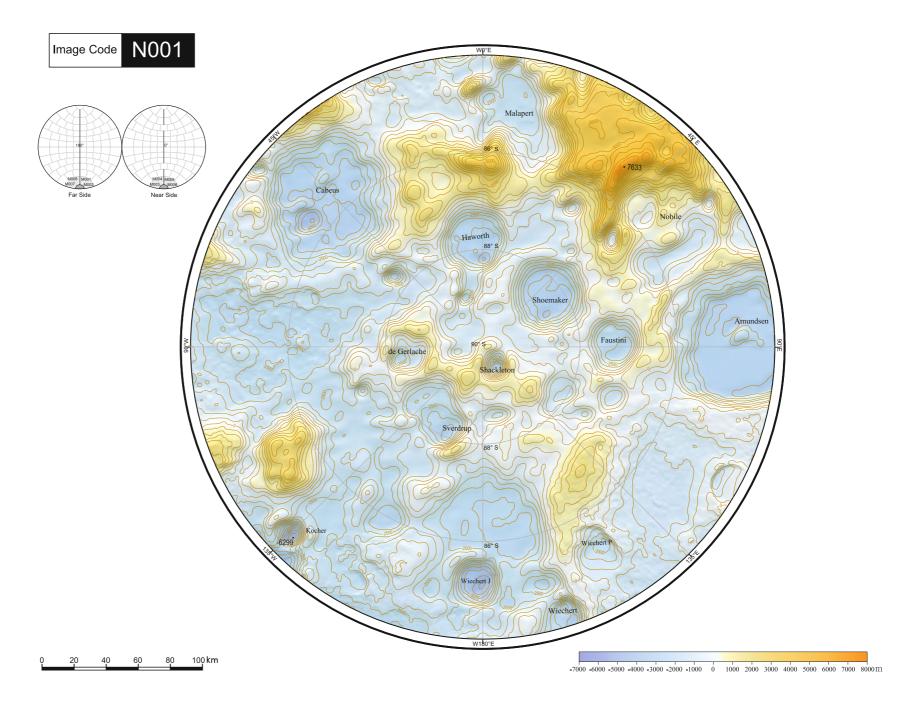


Code of the Subdivision Topographic Maps of the Moon









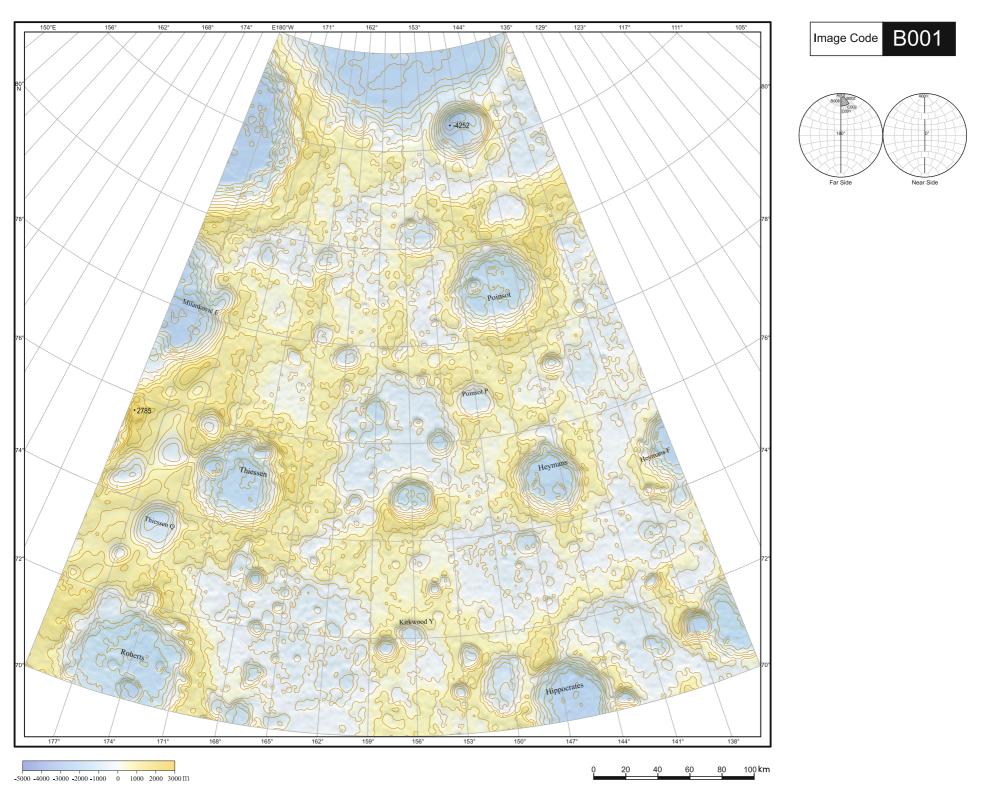
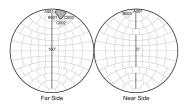
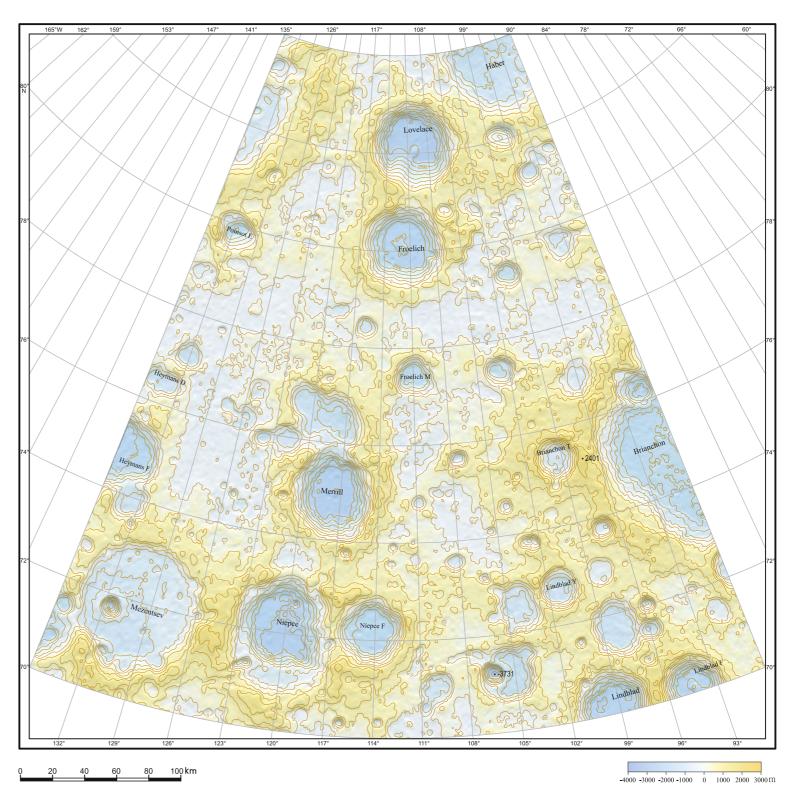


Image Code B002





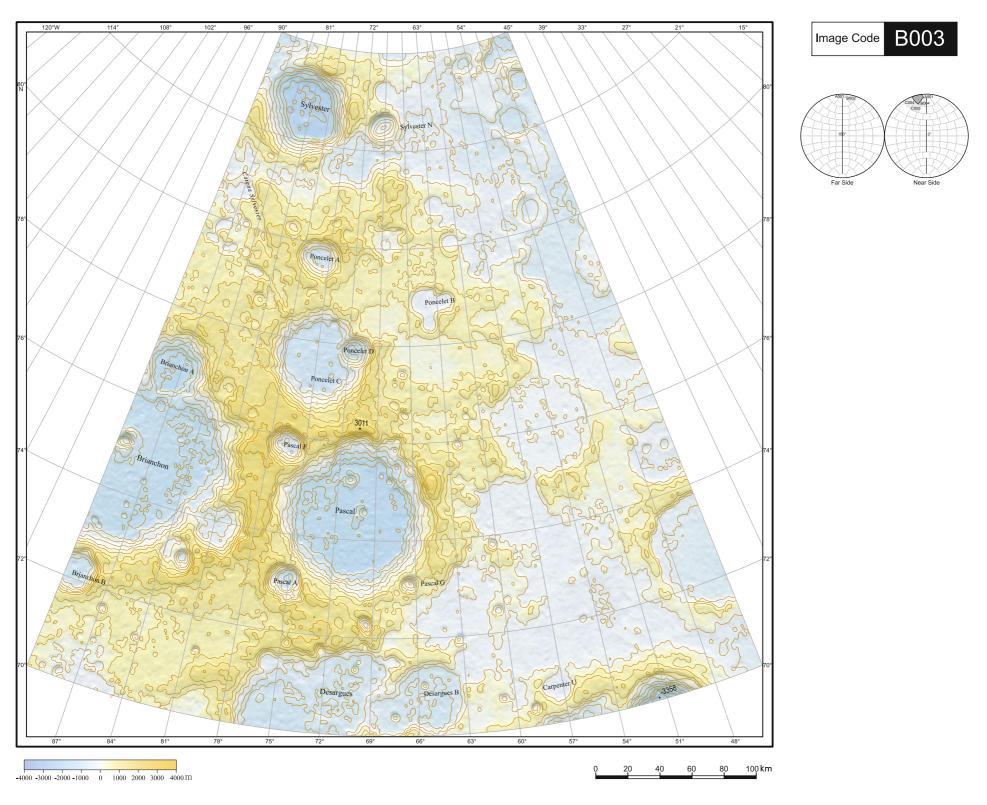
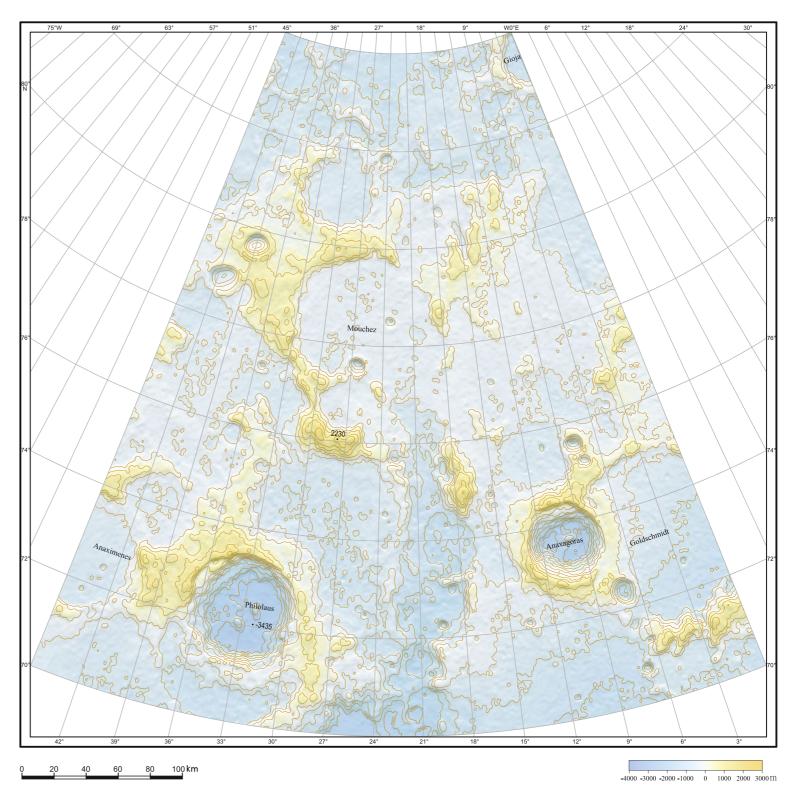
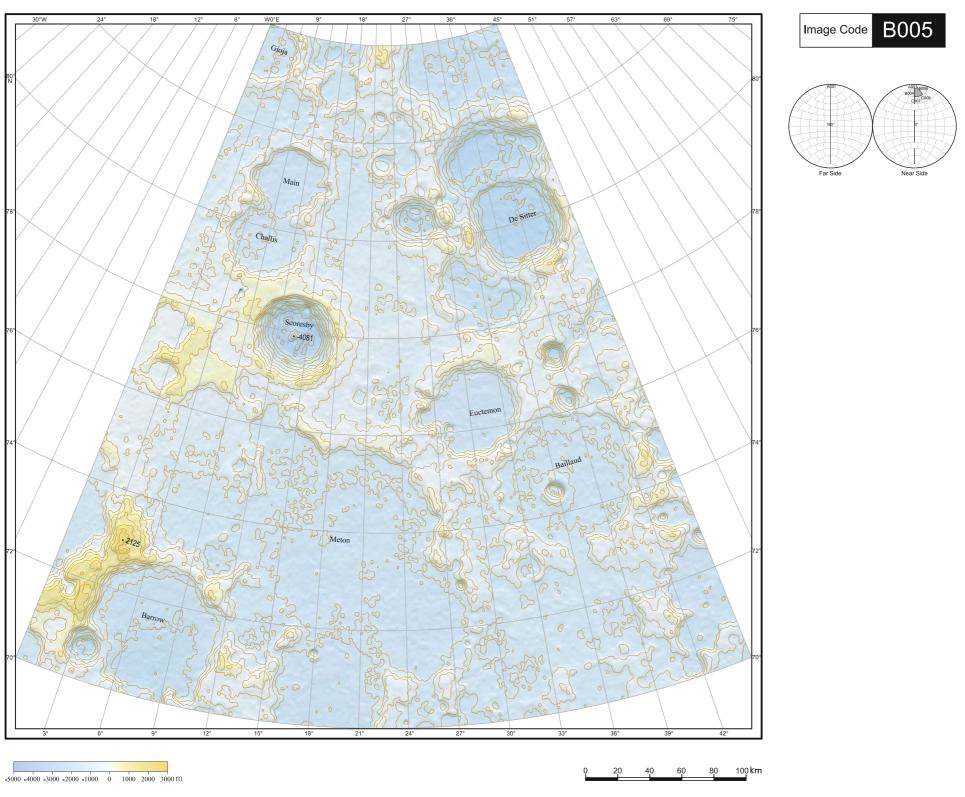
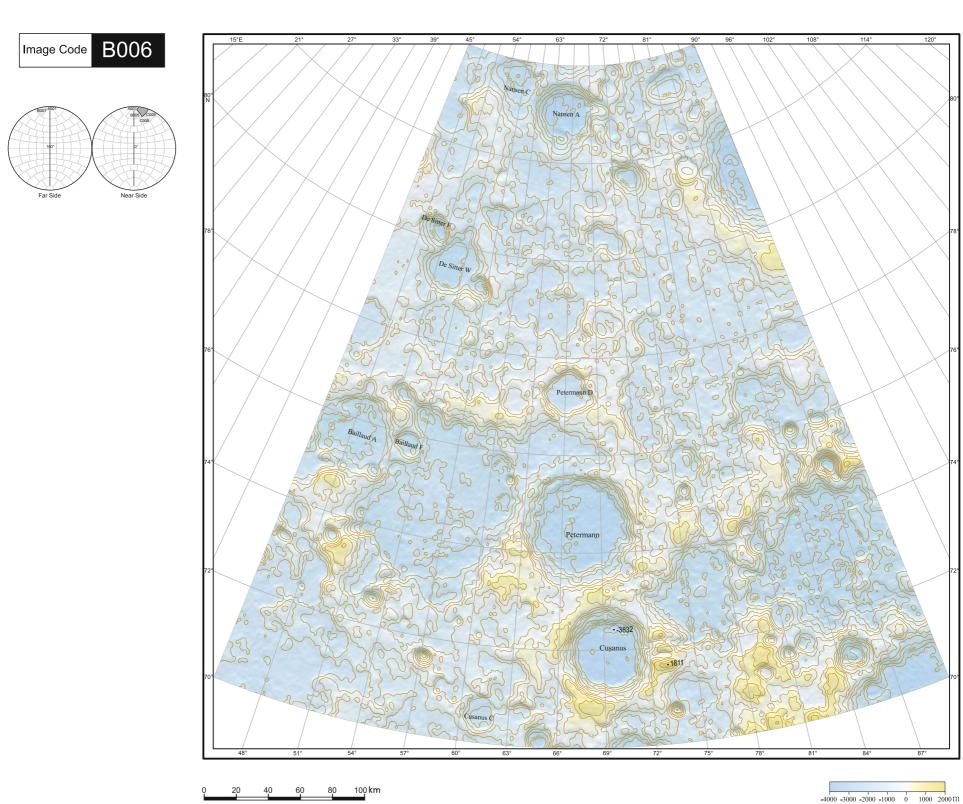


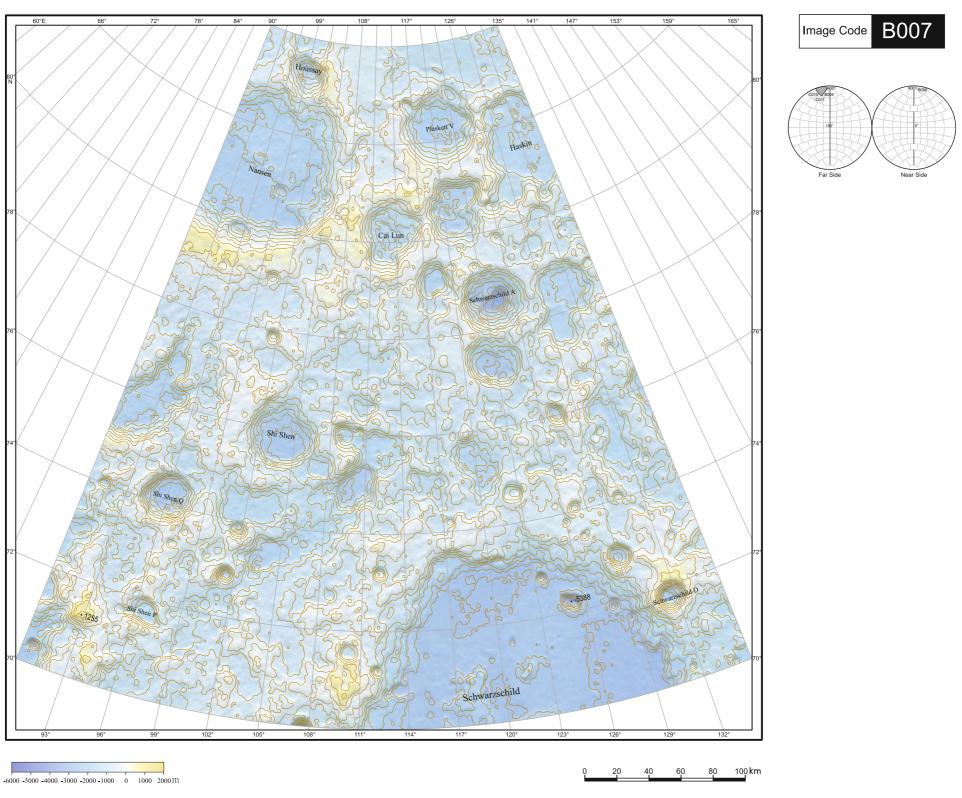
Image Code B004











B008 E180°W Image Code Seares B 174°

80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 m

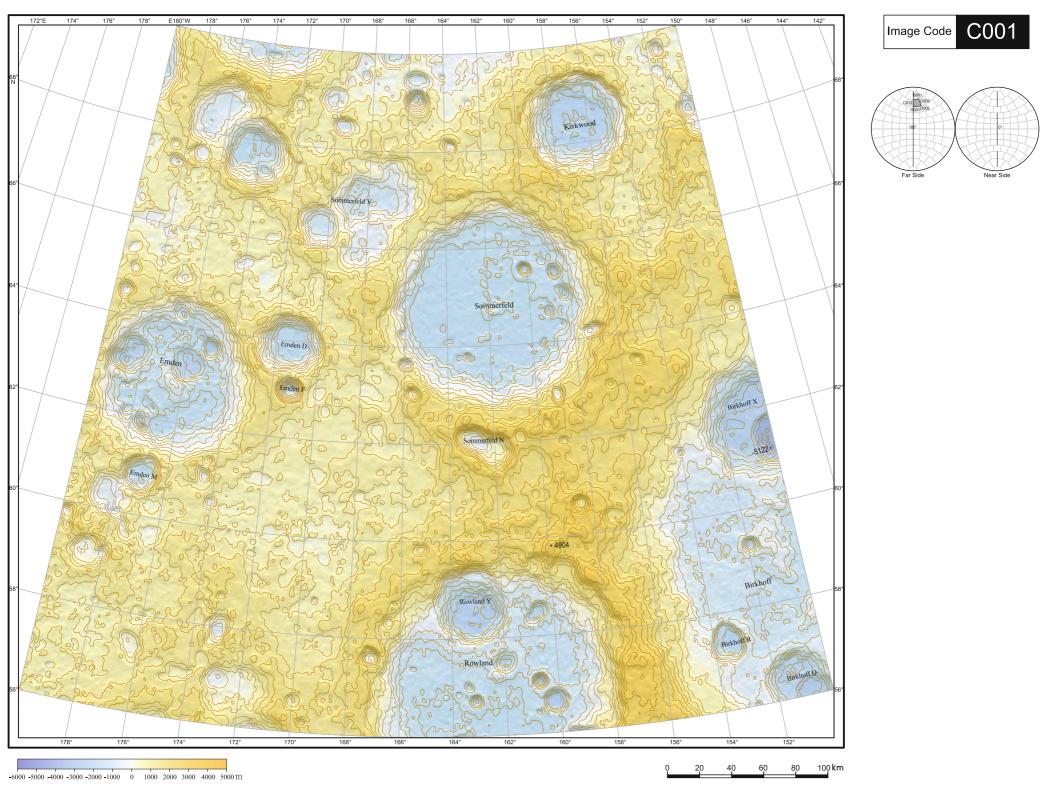
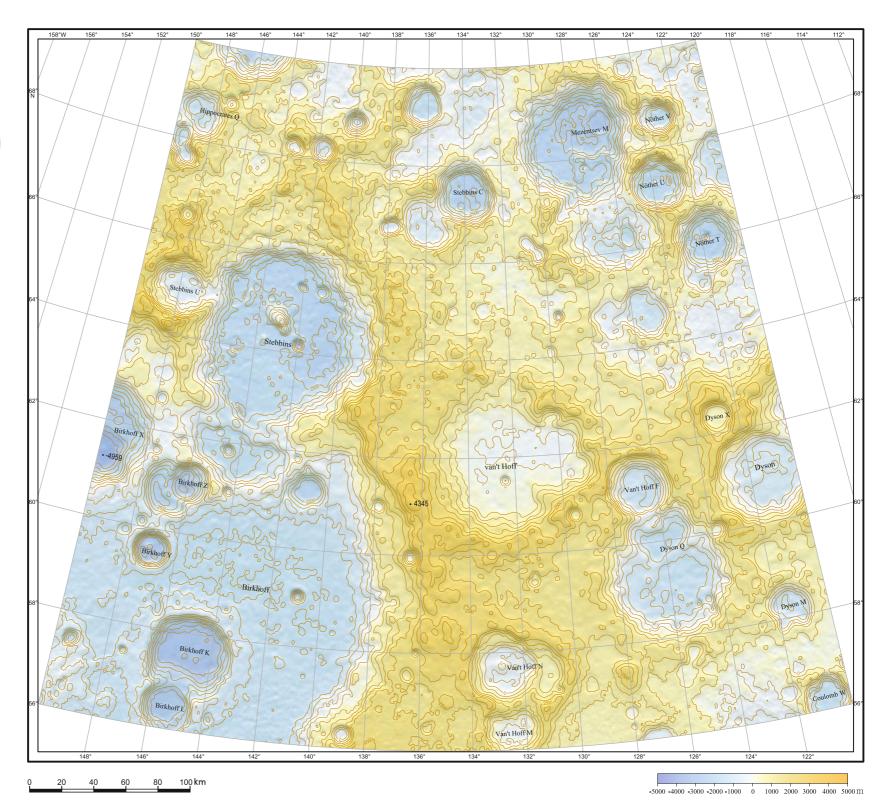
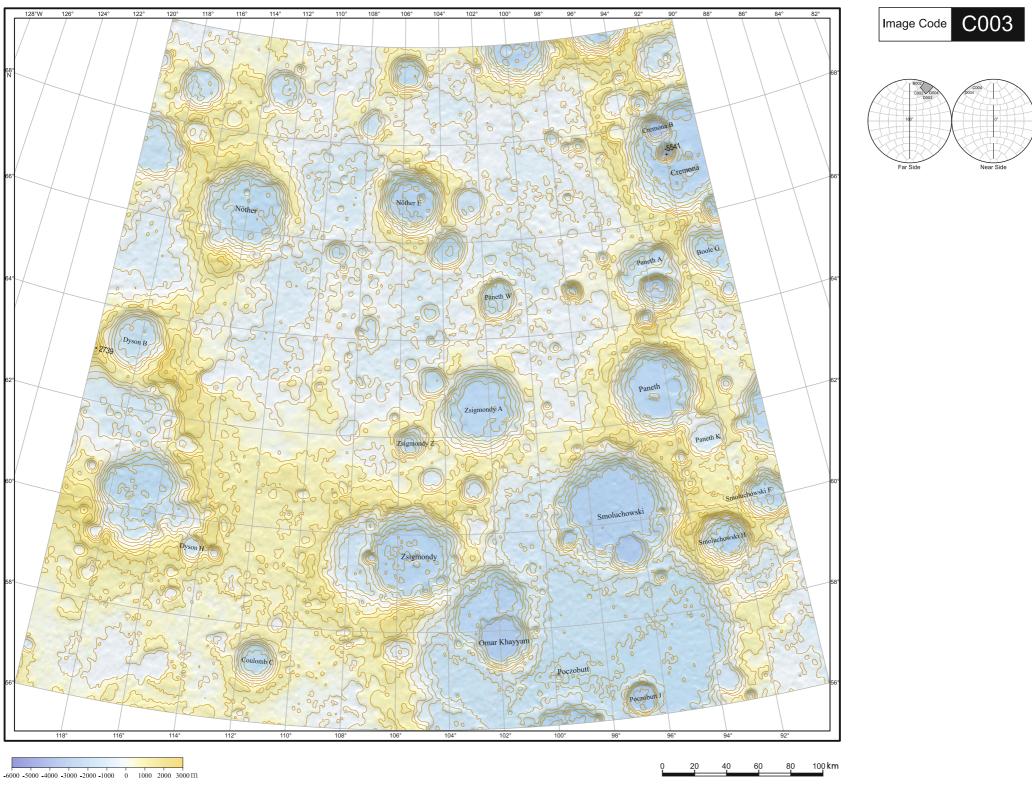
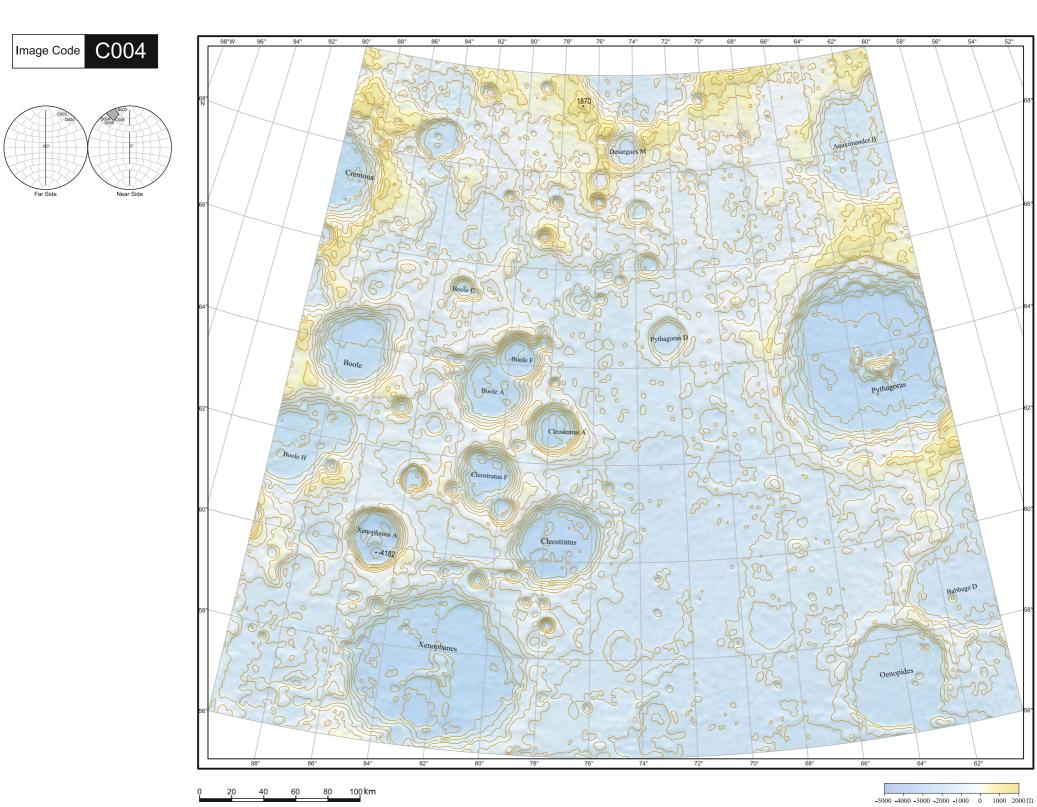
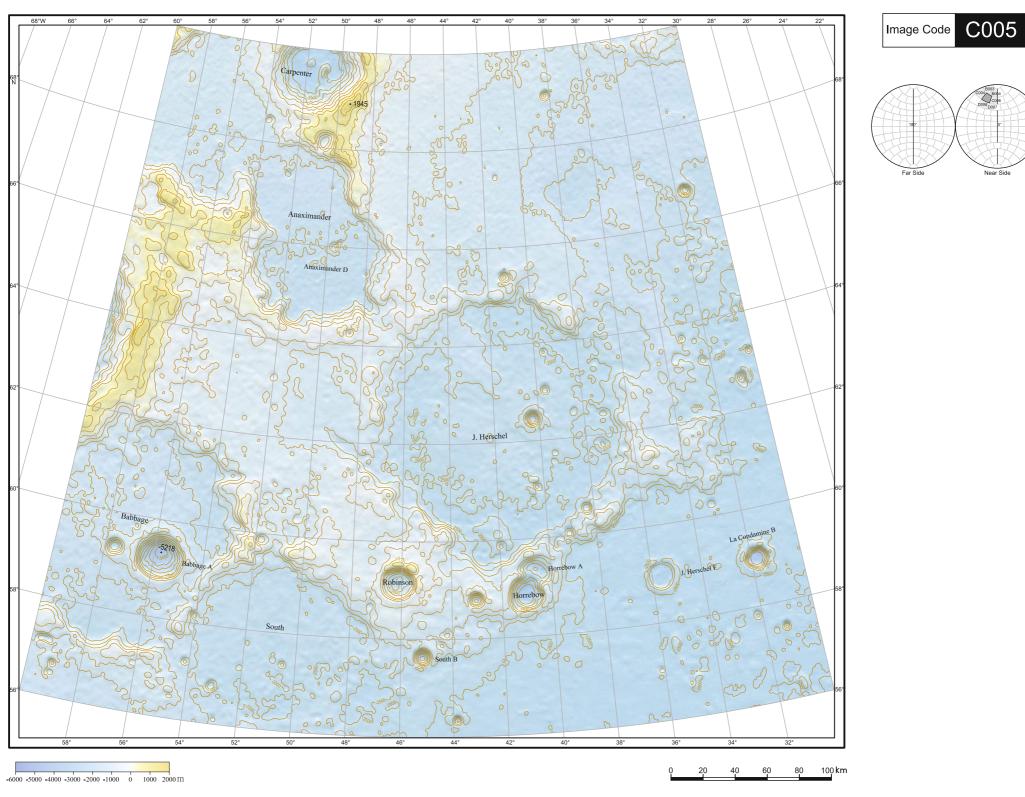


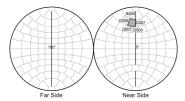
Image Code C002

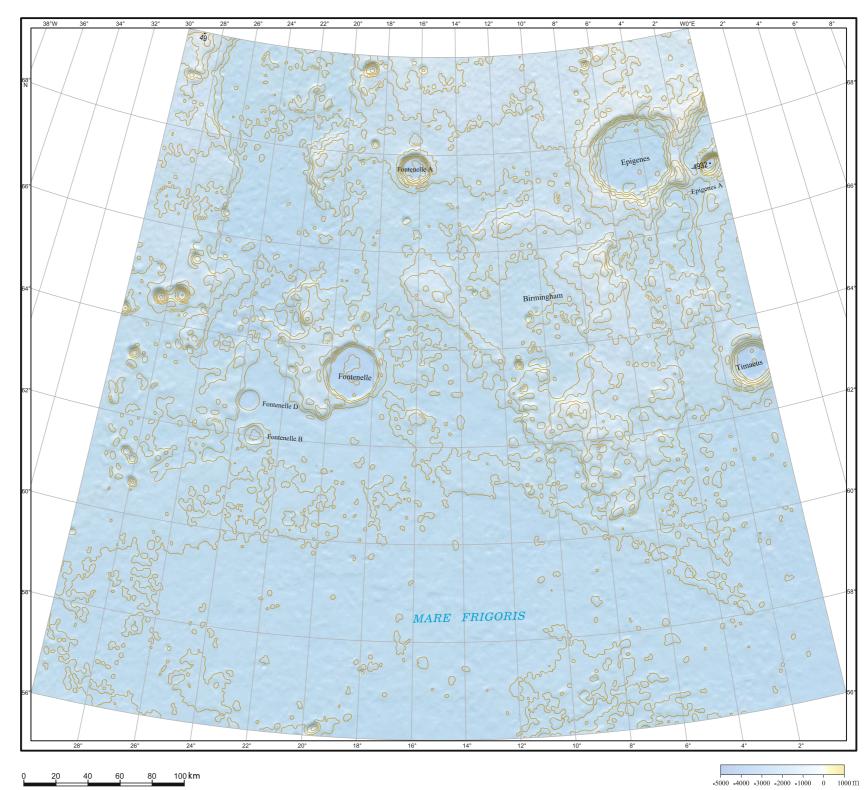


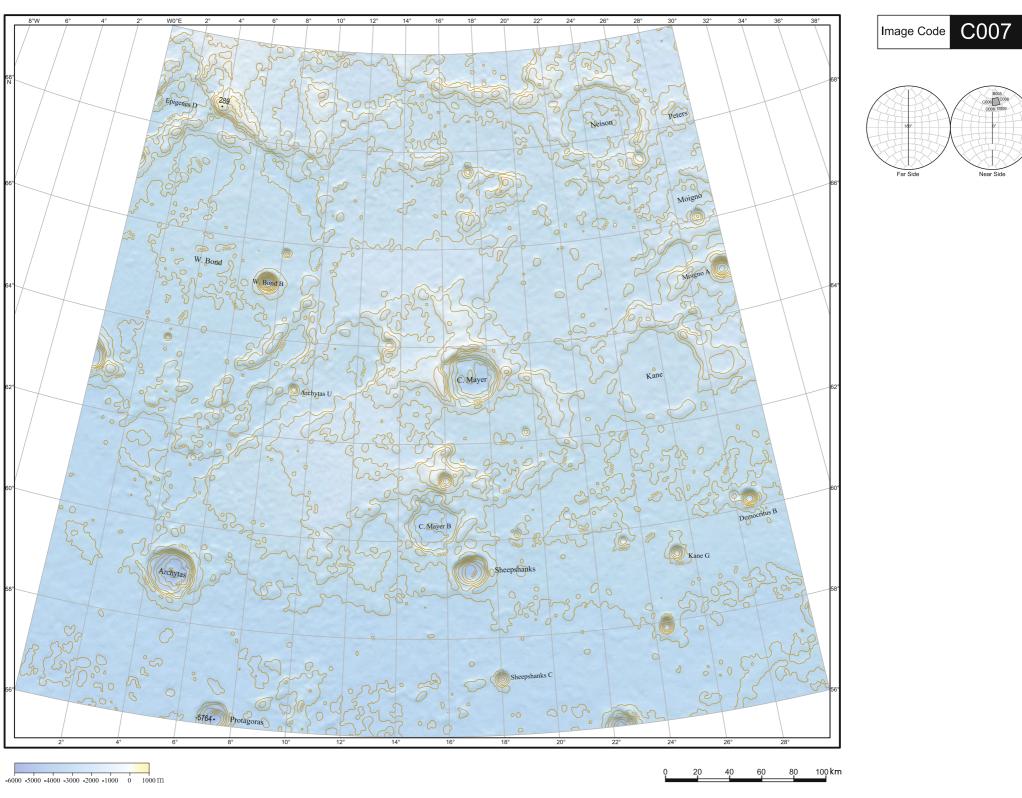








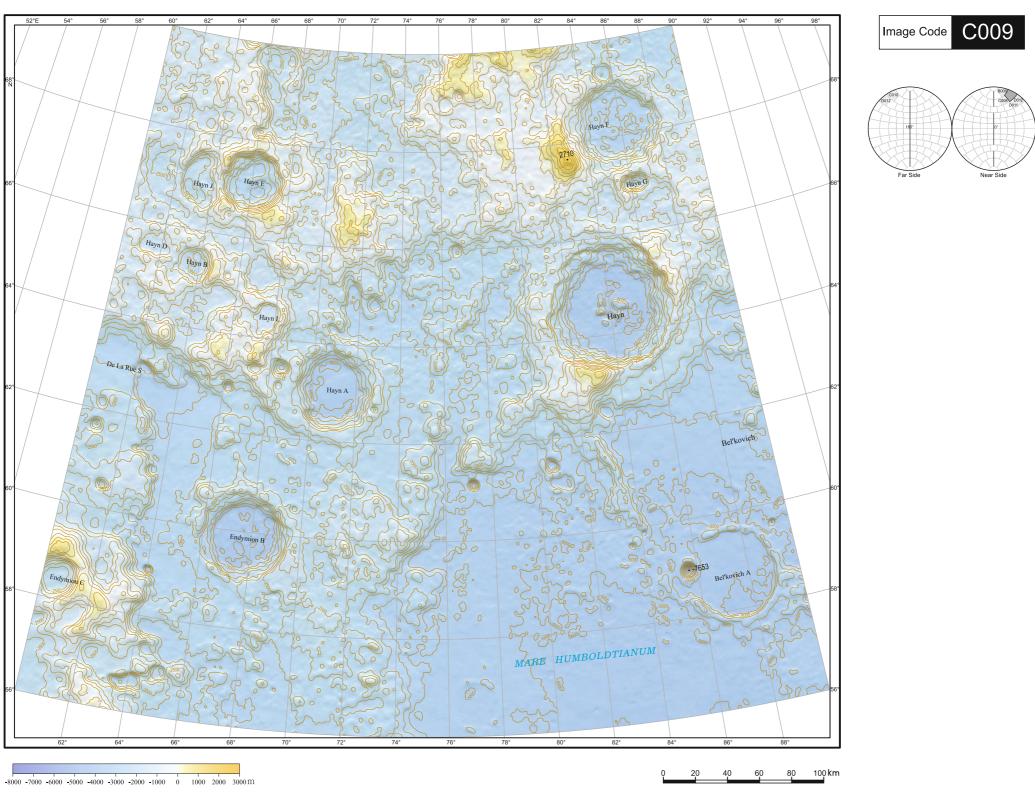


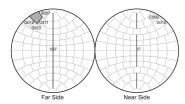


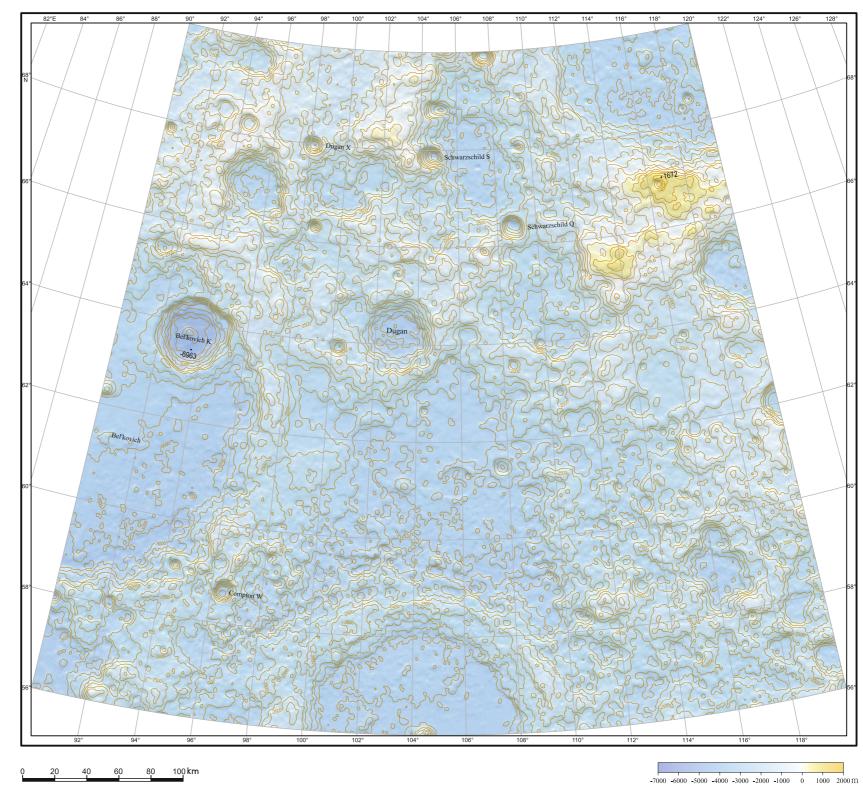
C008 Image Code Schwabe

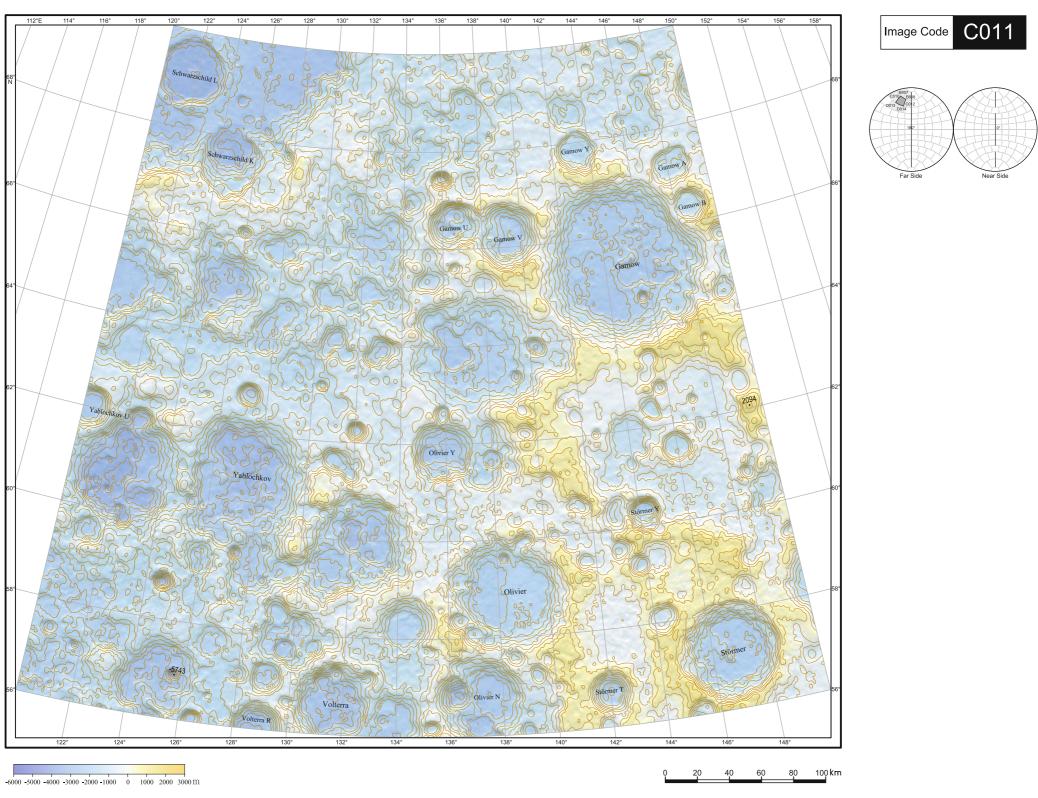
40 60 80 100 km

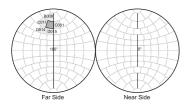
-5000 -4000 -3000 -2000 -1000 0 1000 2000 m

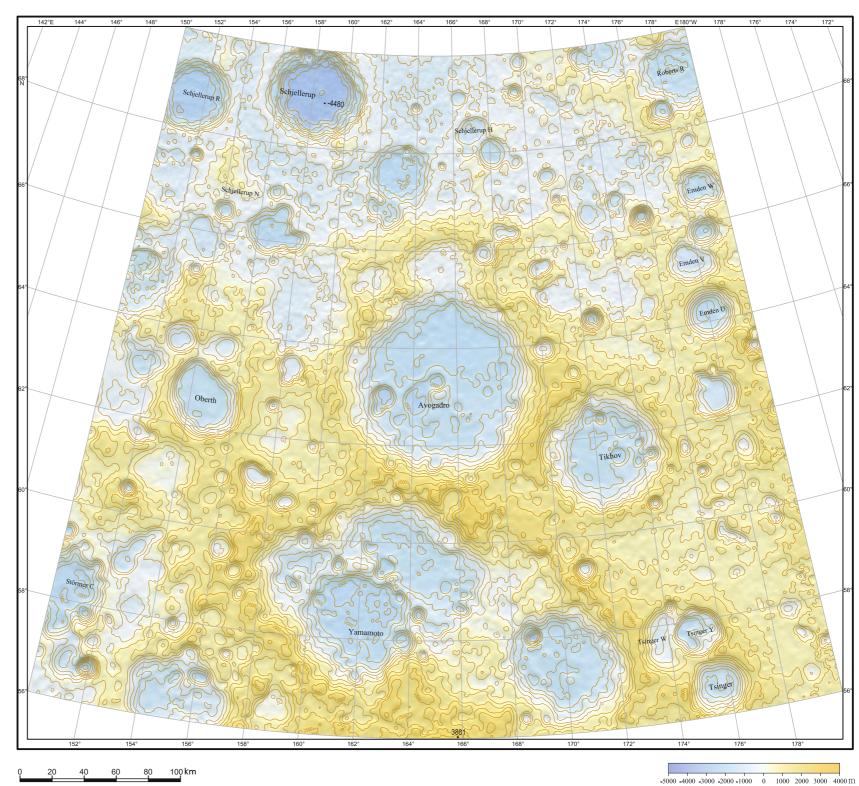


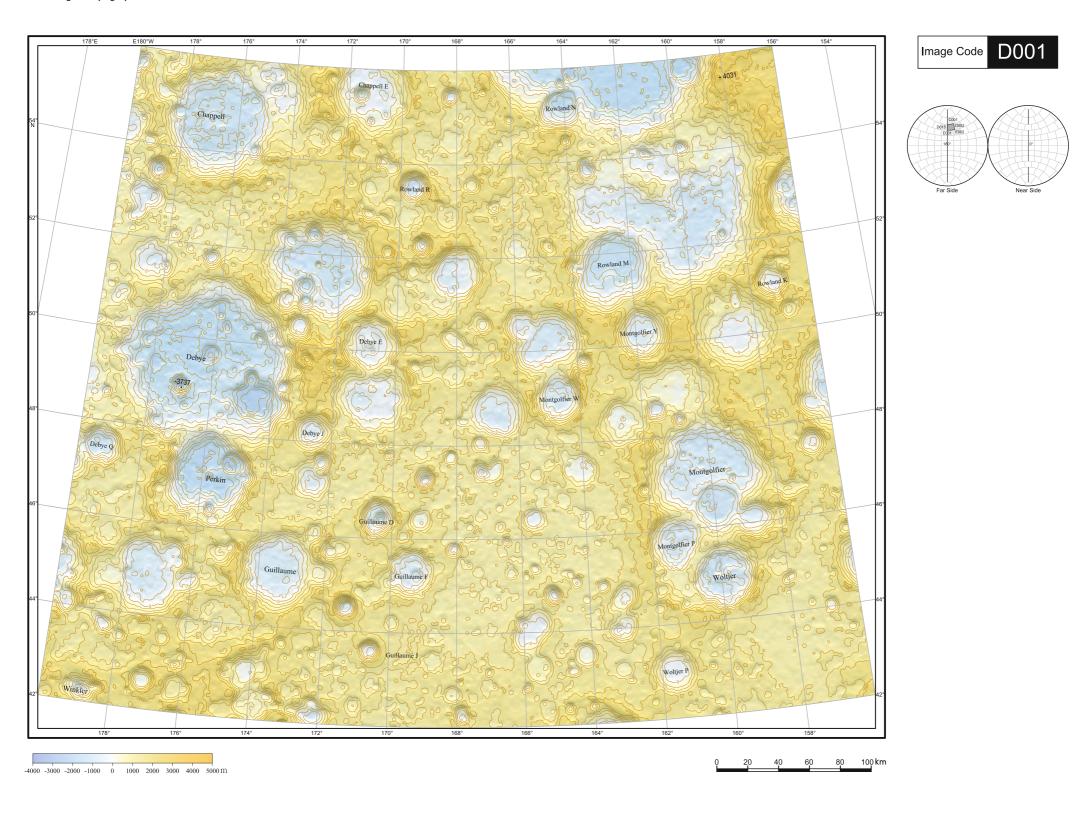






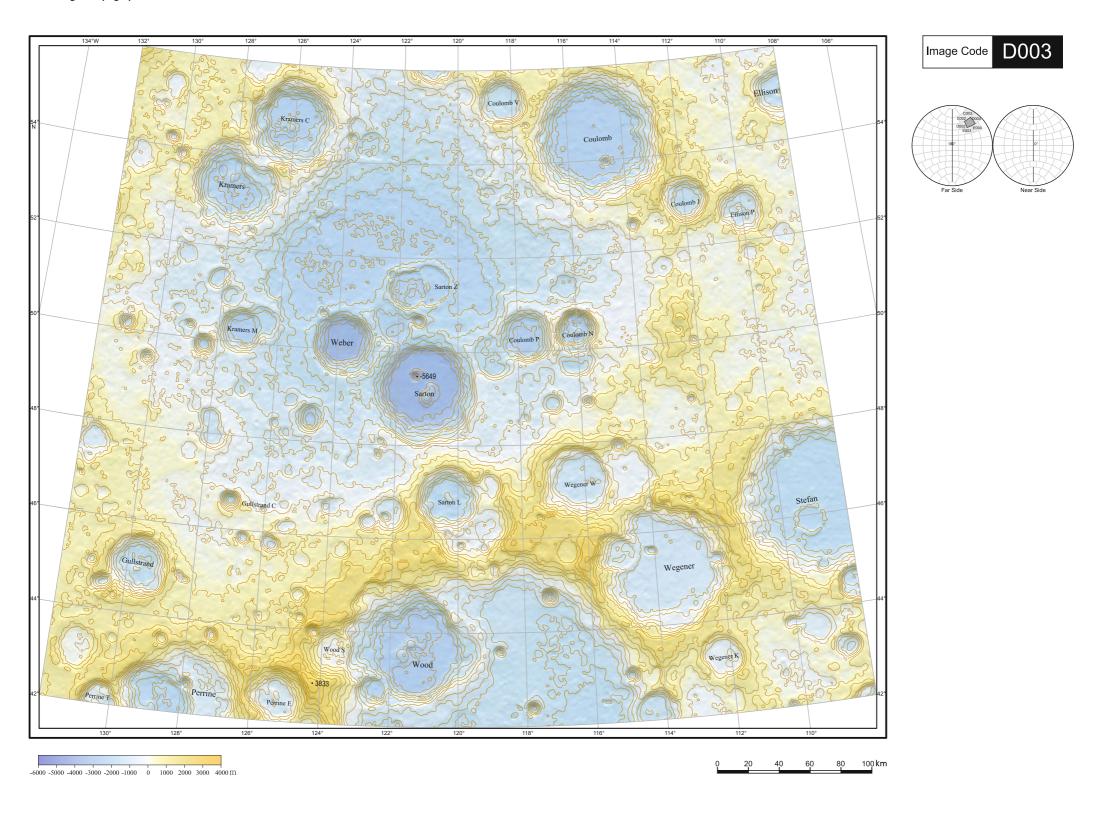


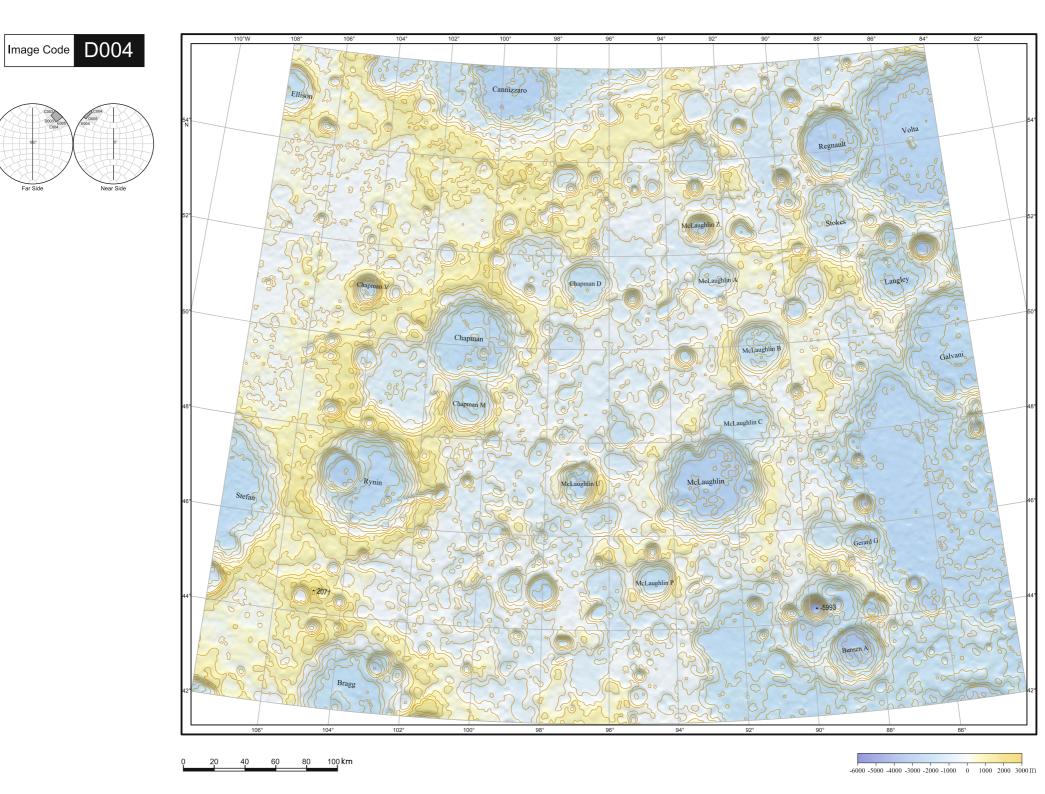


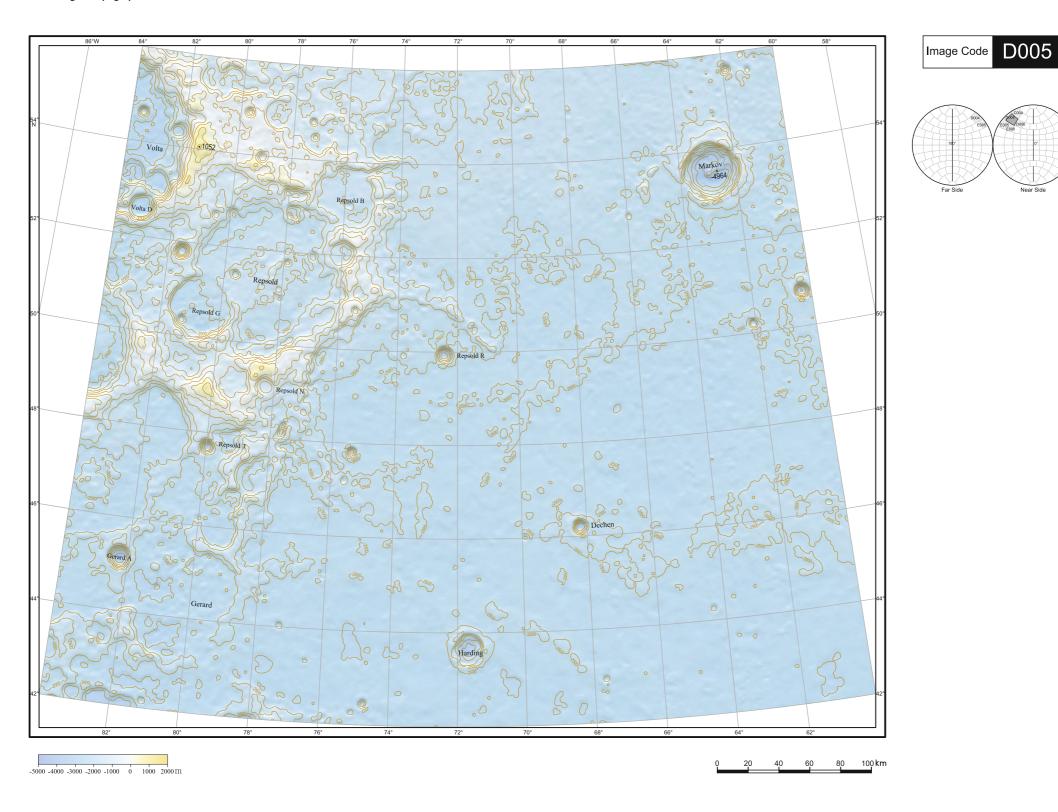


D002 Image Code 95166 Carnet 9-3761 Paraskevopoulos Paraskevopoulos H Esnault-Pelterie Stoletov Fowler A Quételet Kulik Quételet T Von Zeipel

-4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 m







80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 m

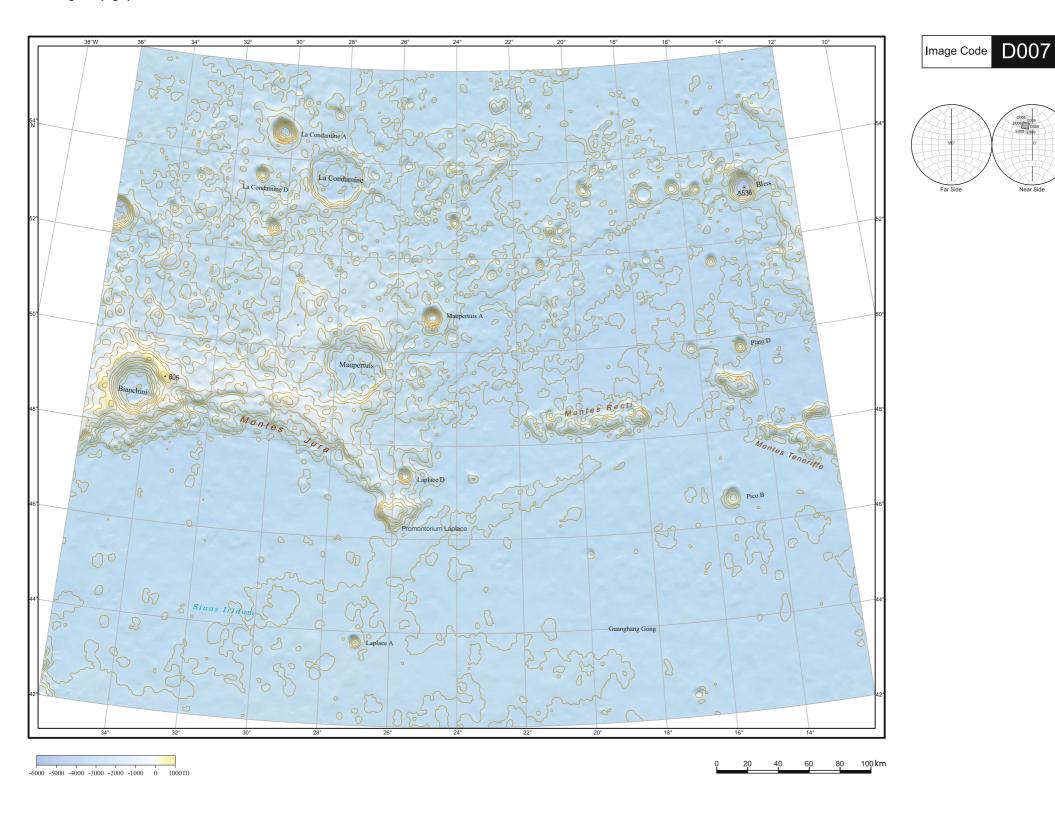


Image Code D008 Plato o

80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 m

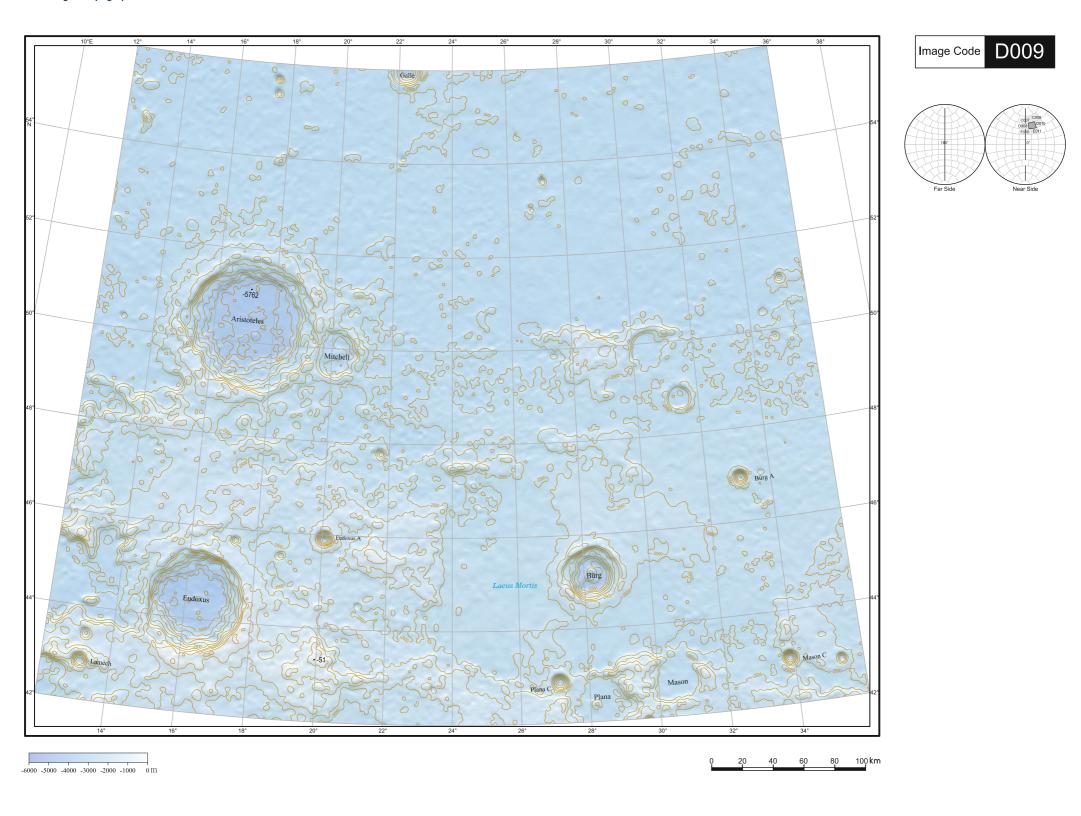


Image Code D010 Hercufes Chevallier

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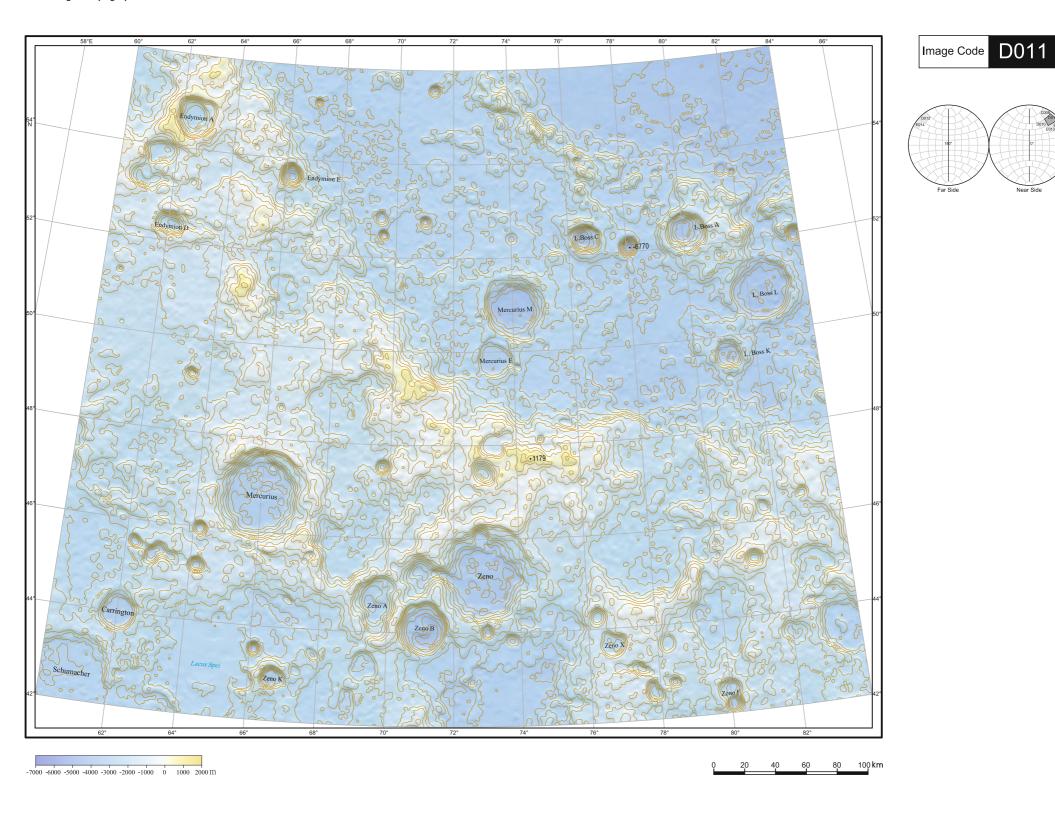


Image Code D012 Vashakidze

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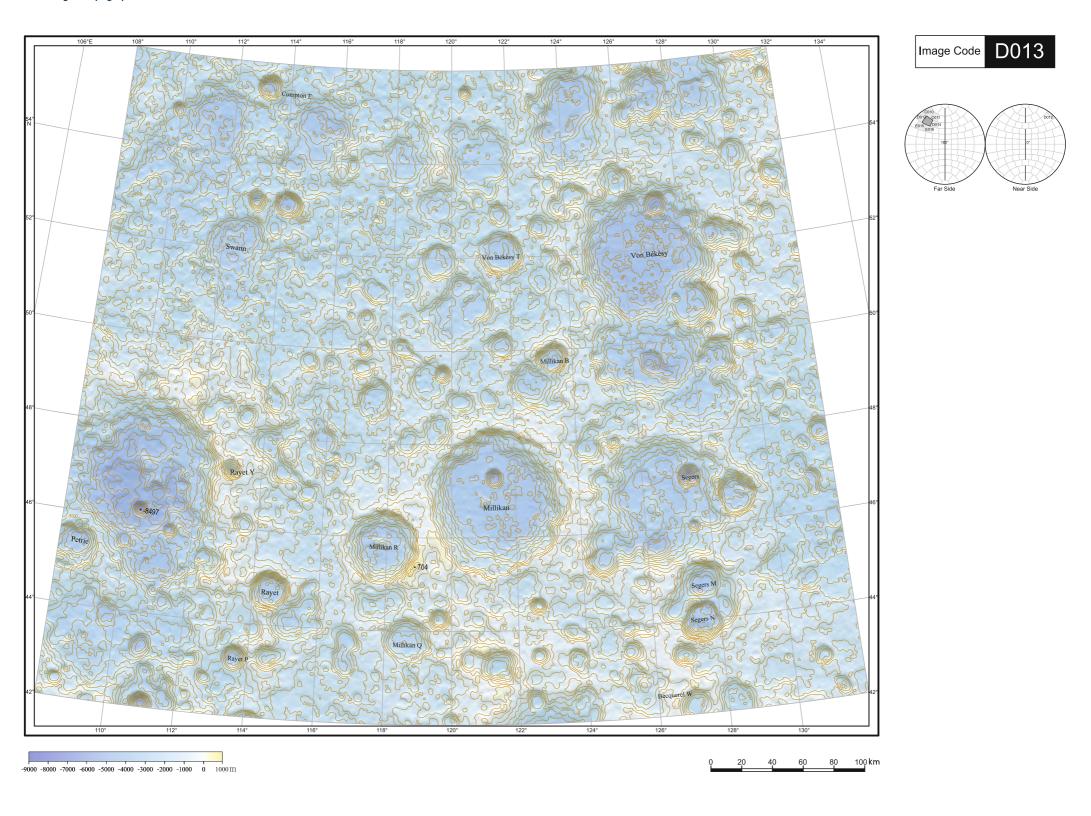
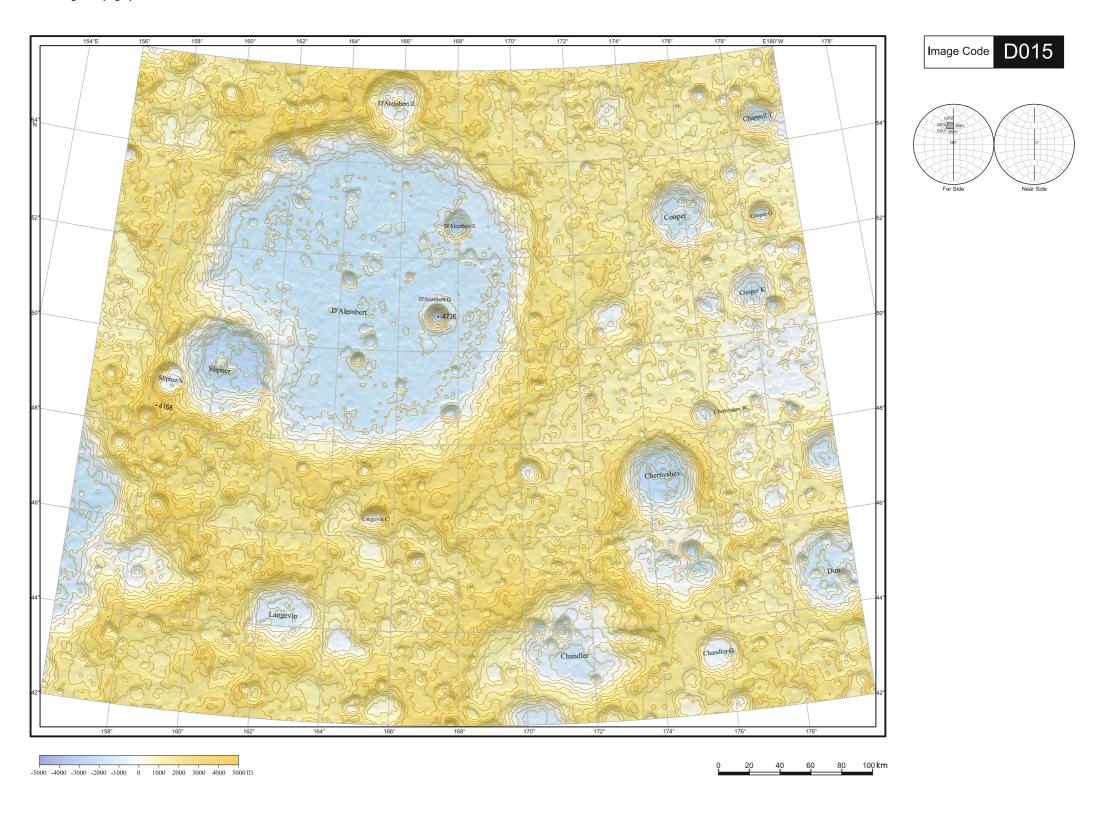
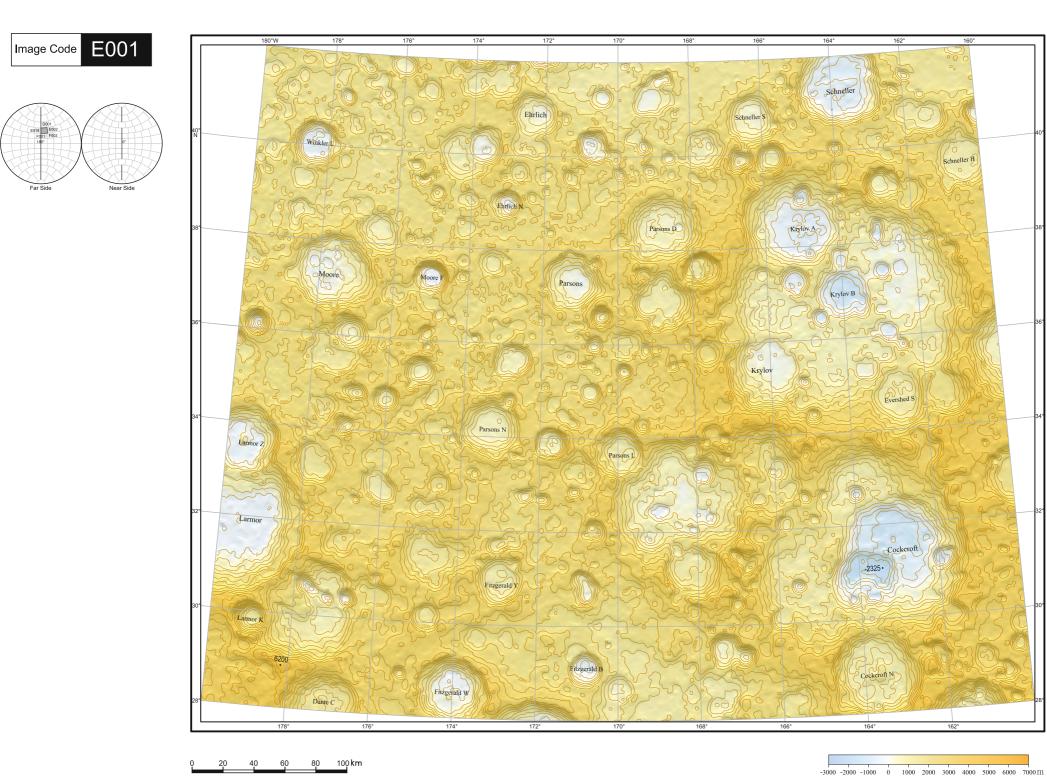
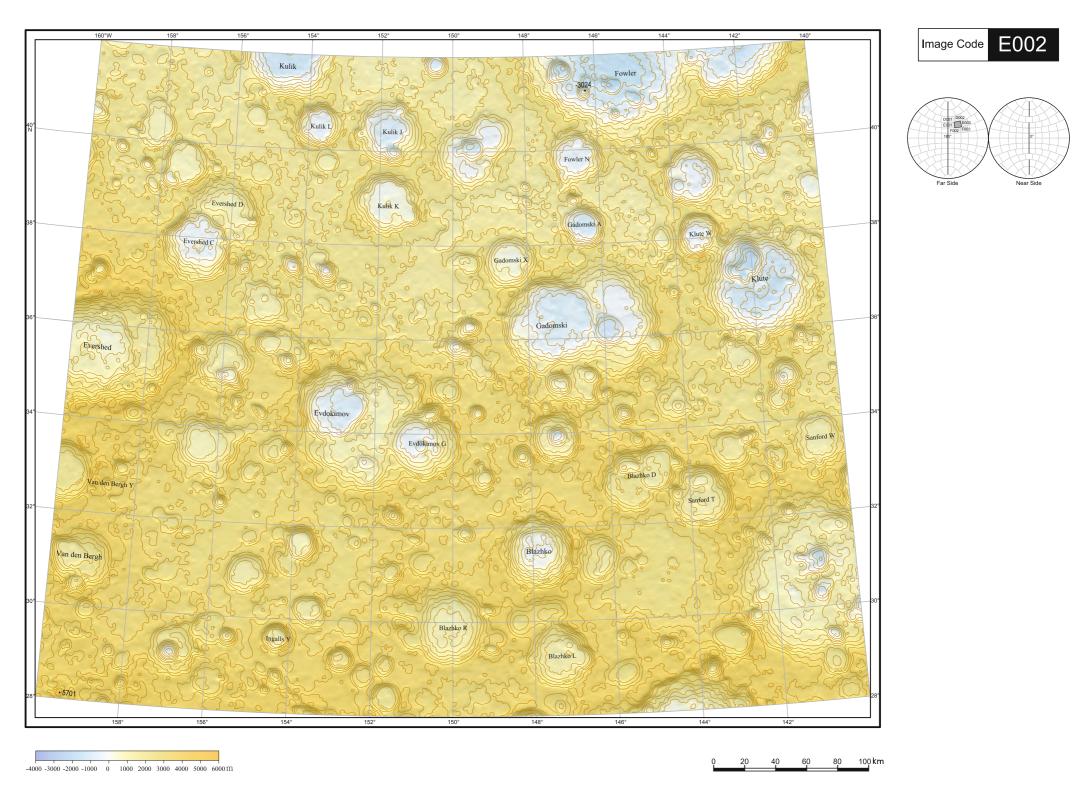
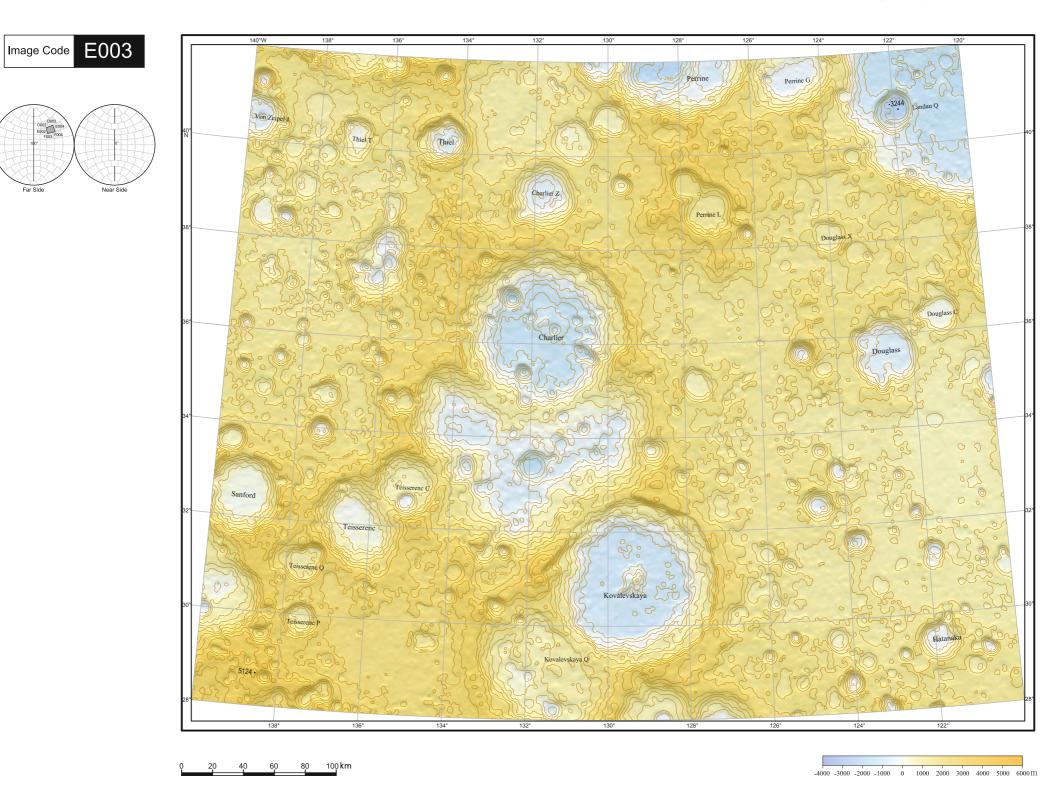


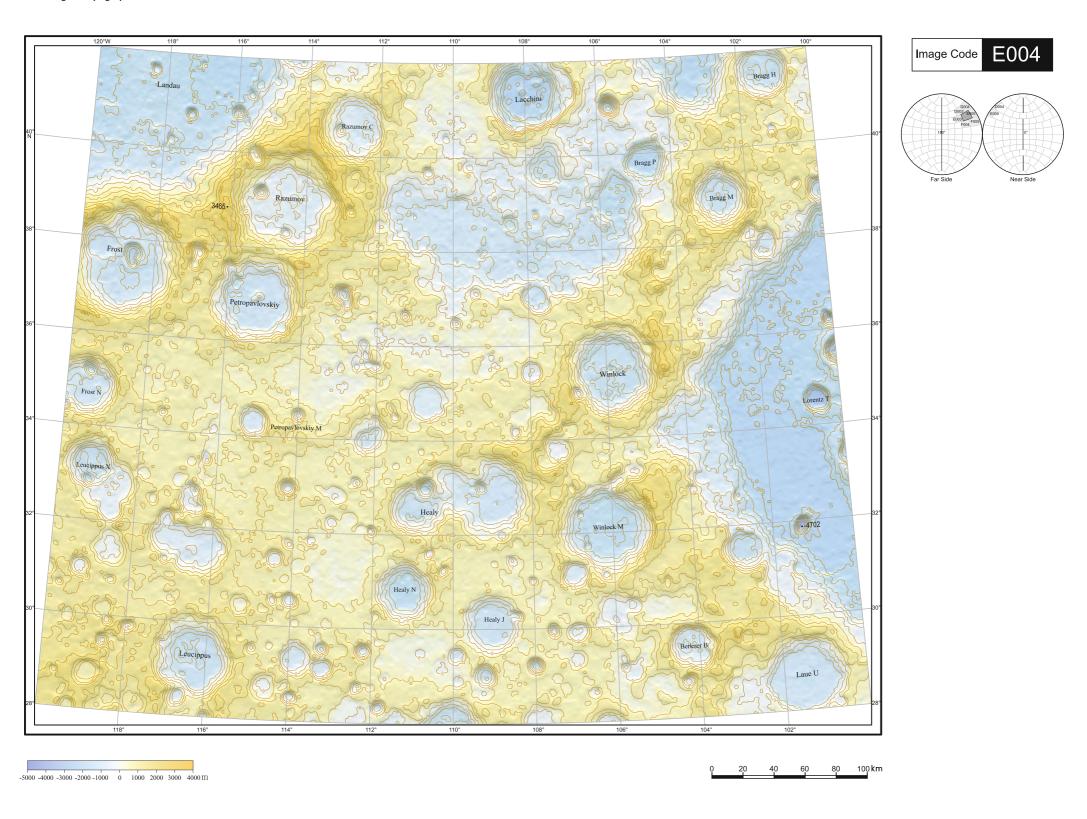
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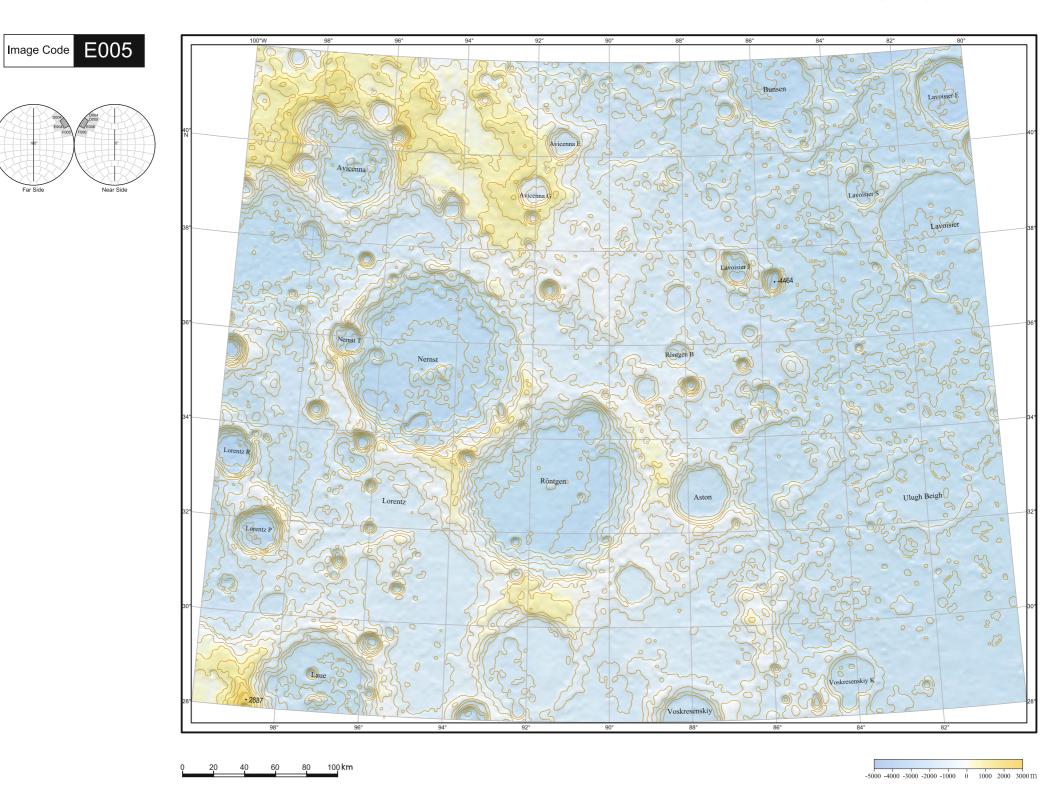


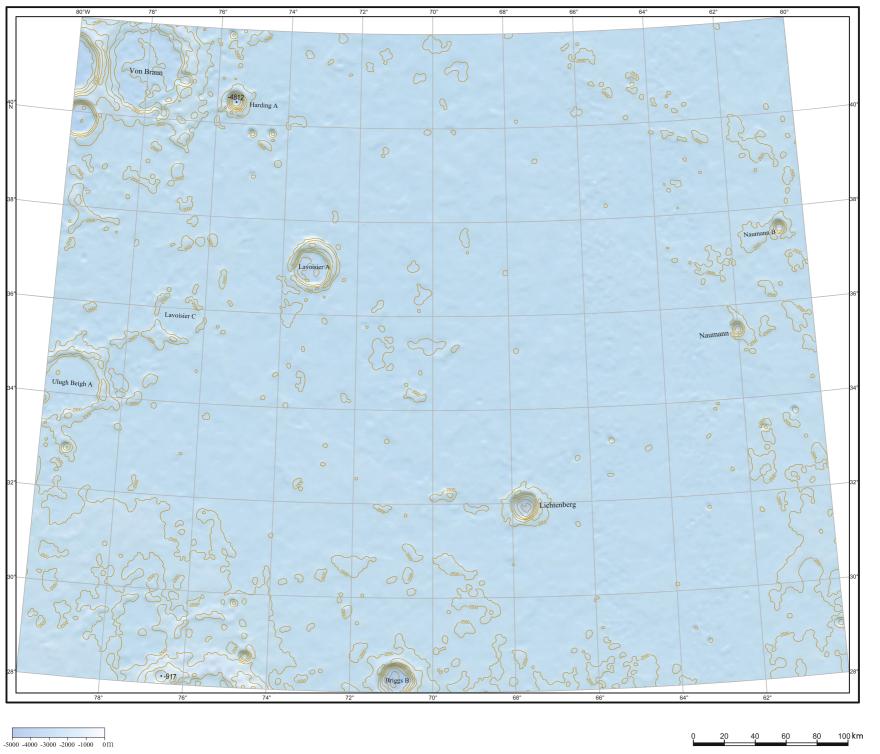


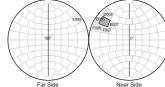


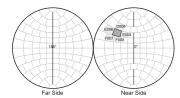


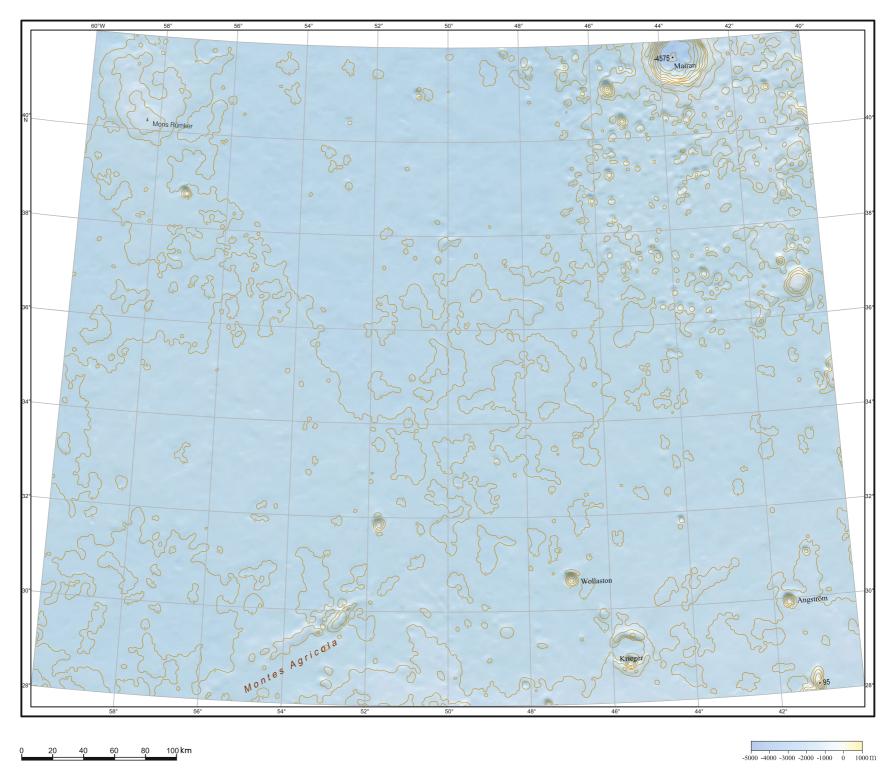


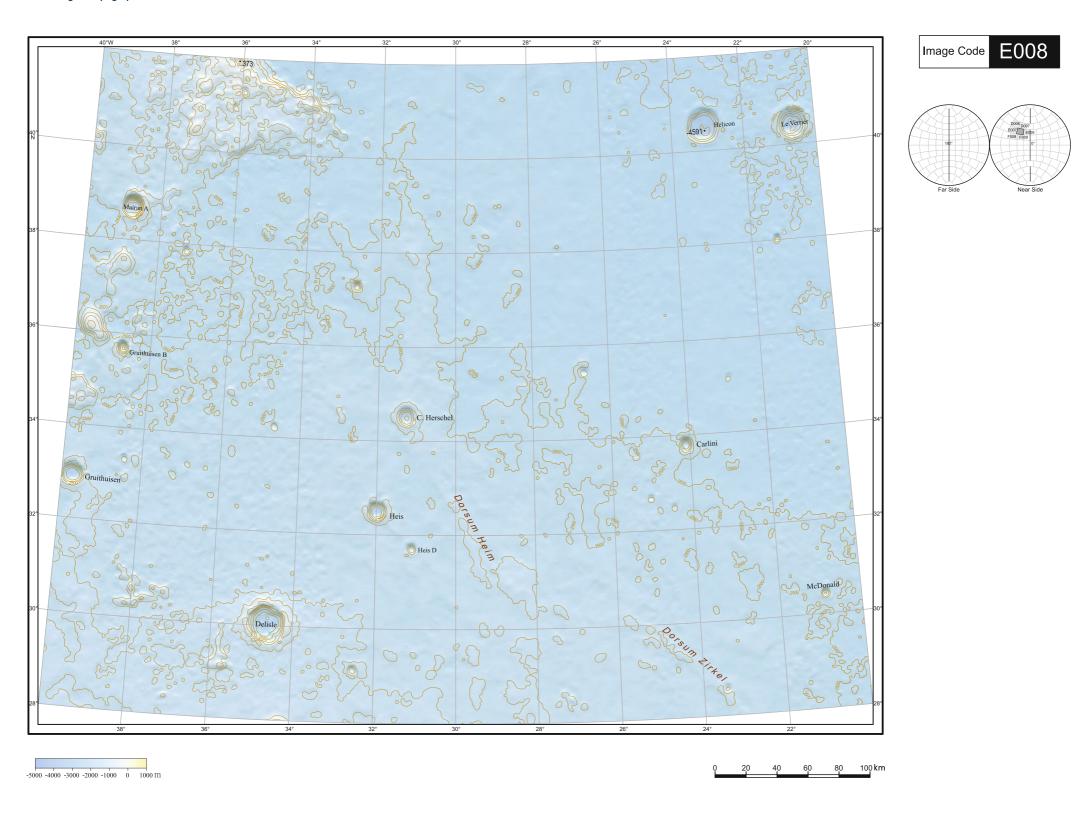






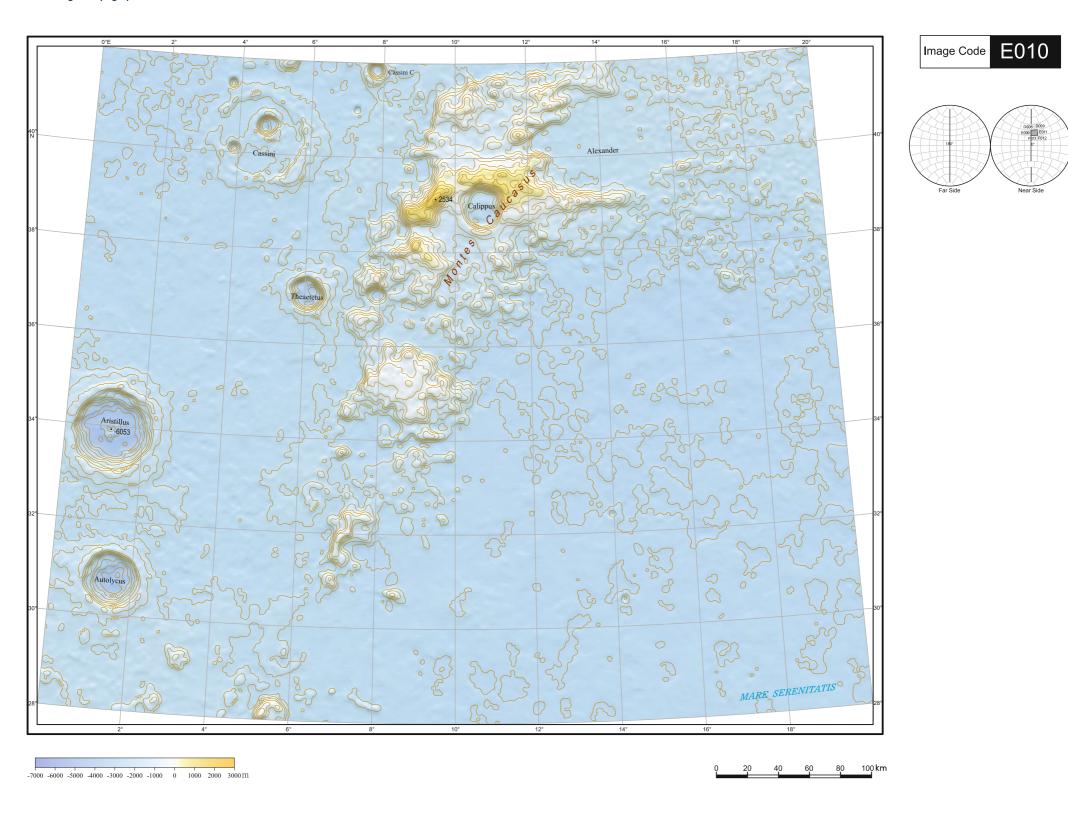


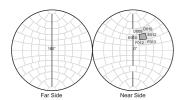


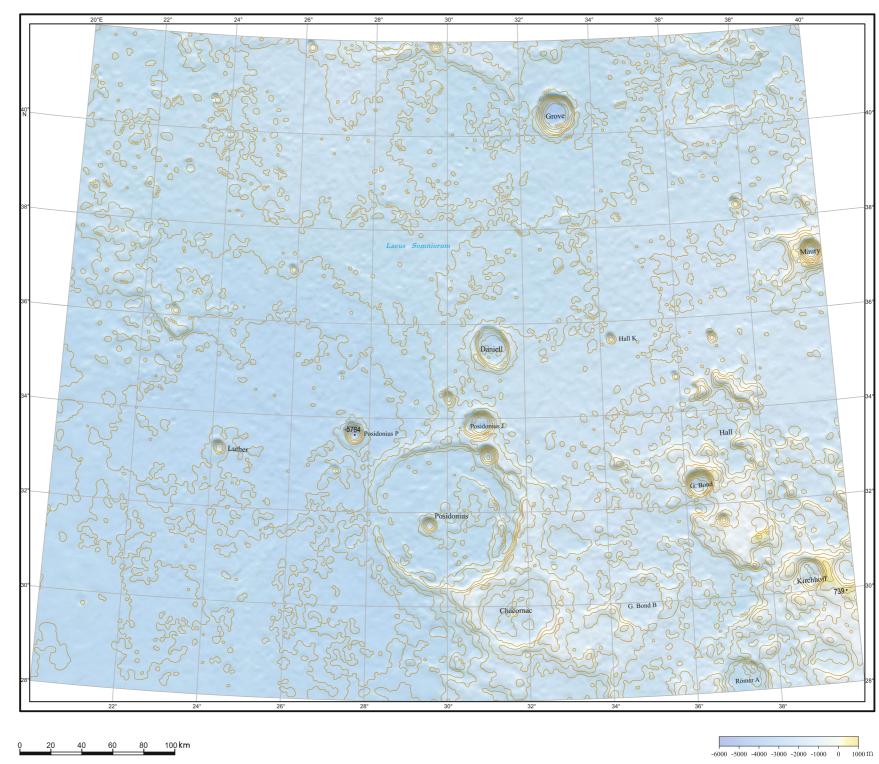


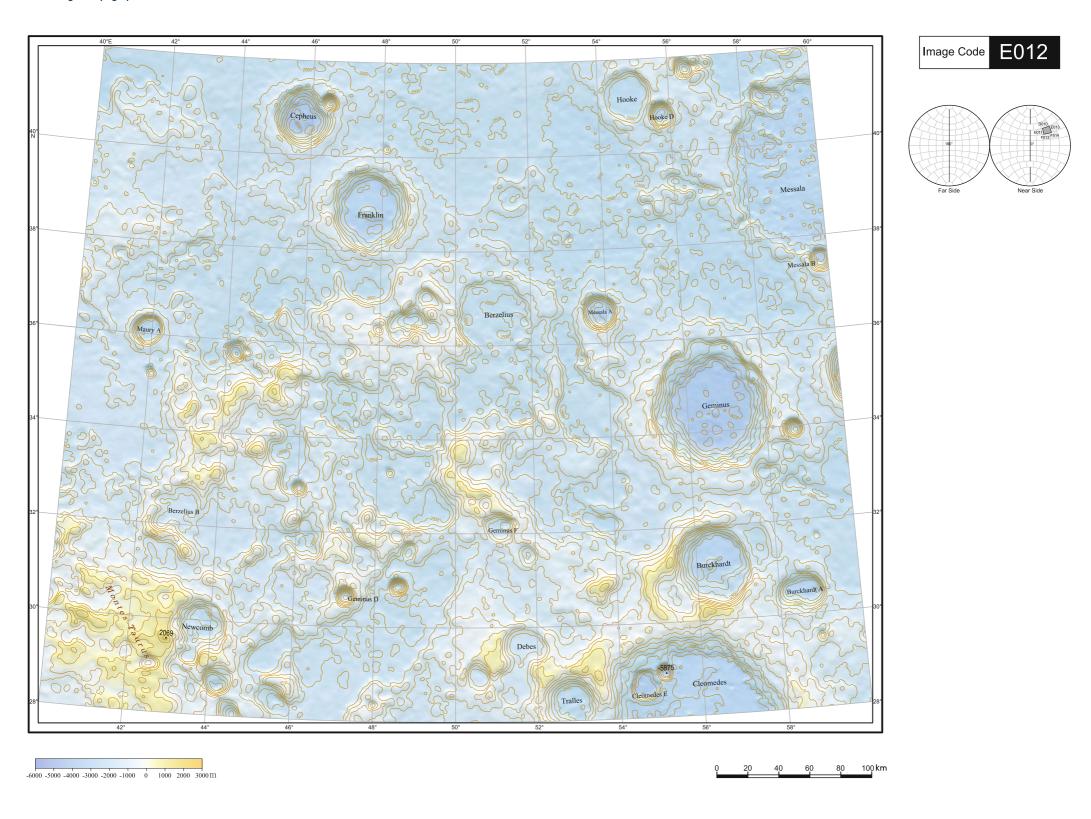
E009 Image Code 5514 Carlini D MARE IMBRIUM 0 Bancroft

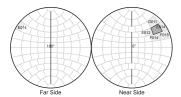
-6000 -5000 -4000 -3000 -2000 -1000 0 m

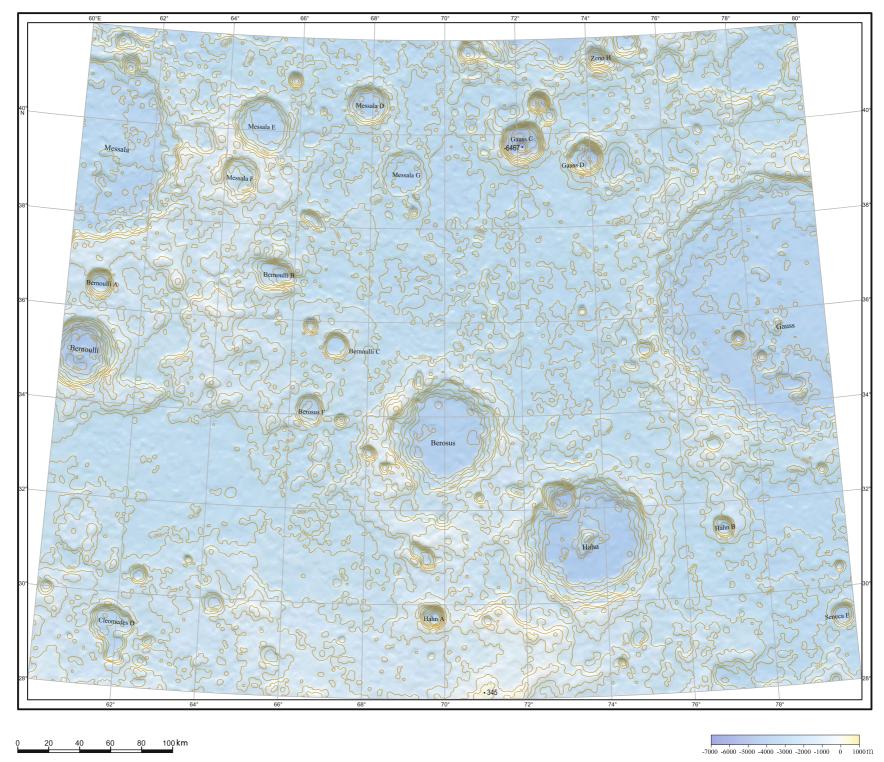


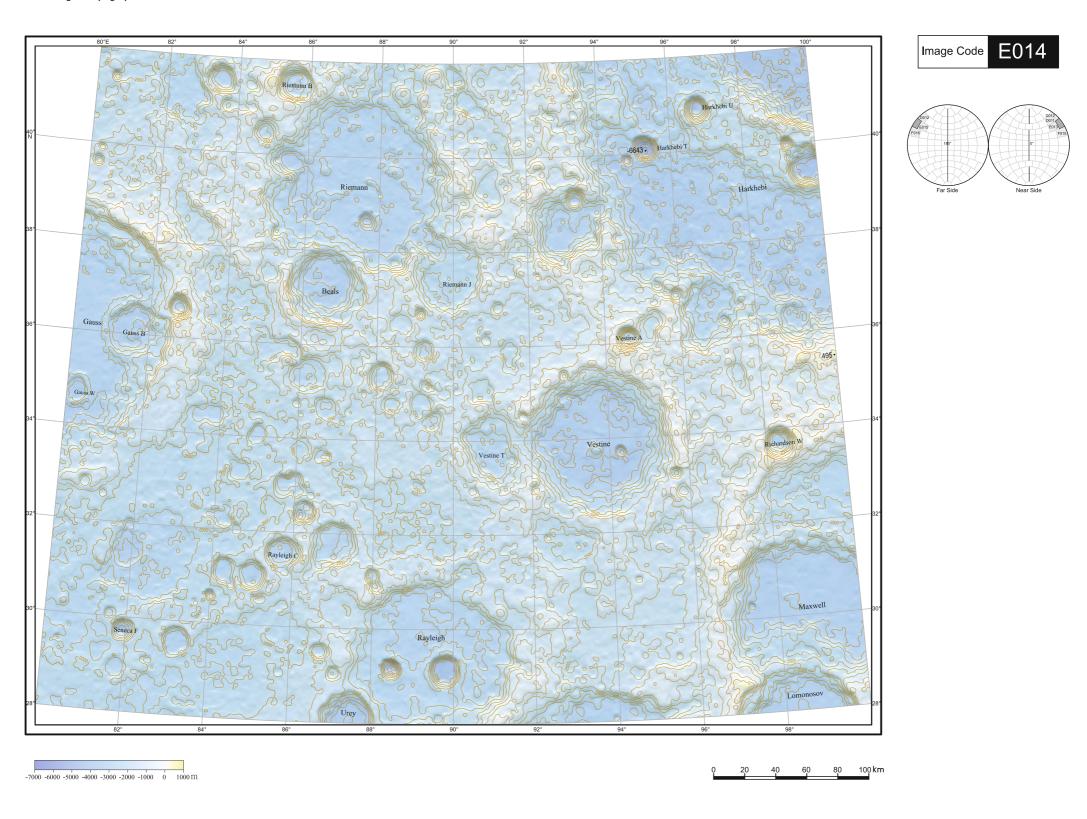


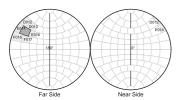


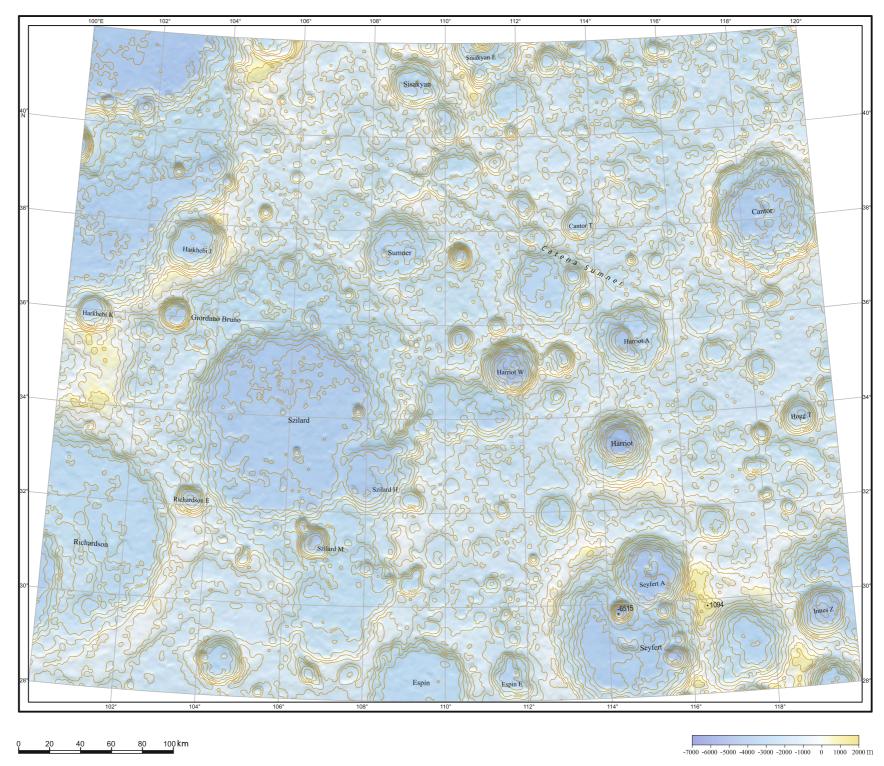


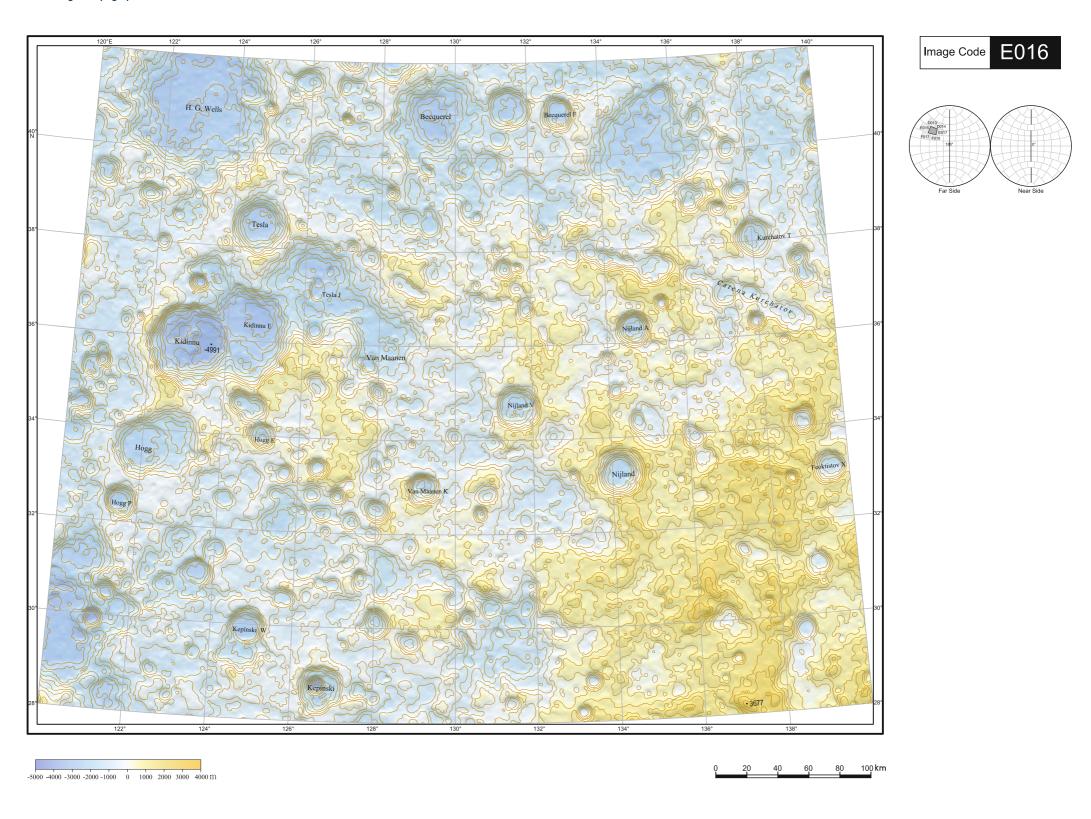




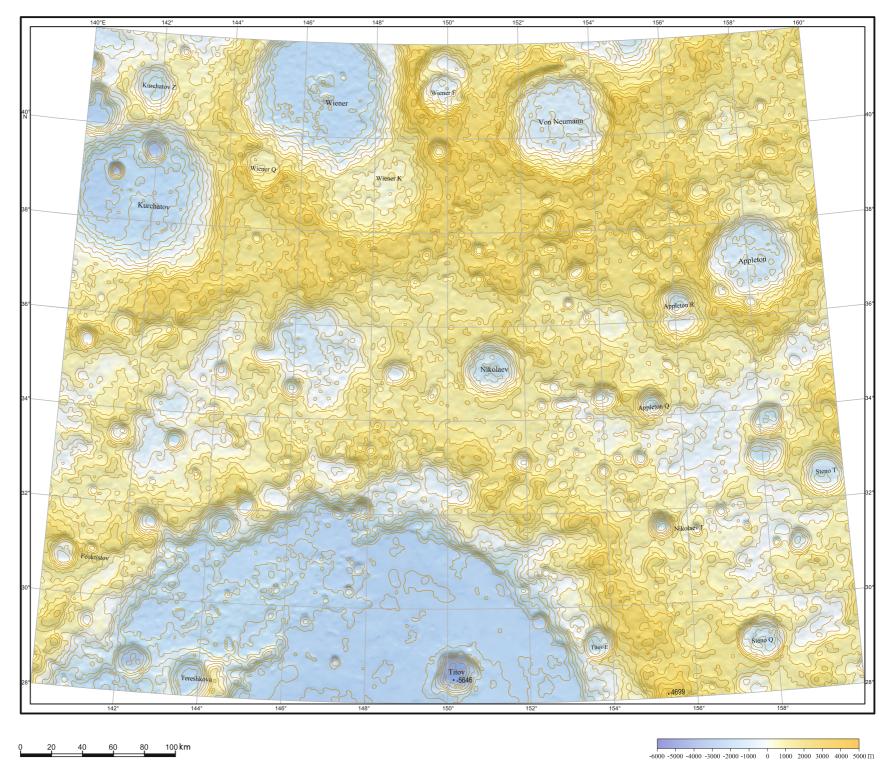












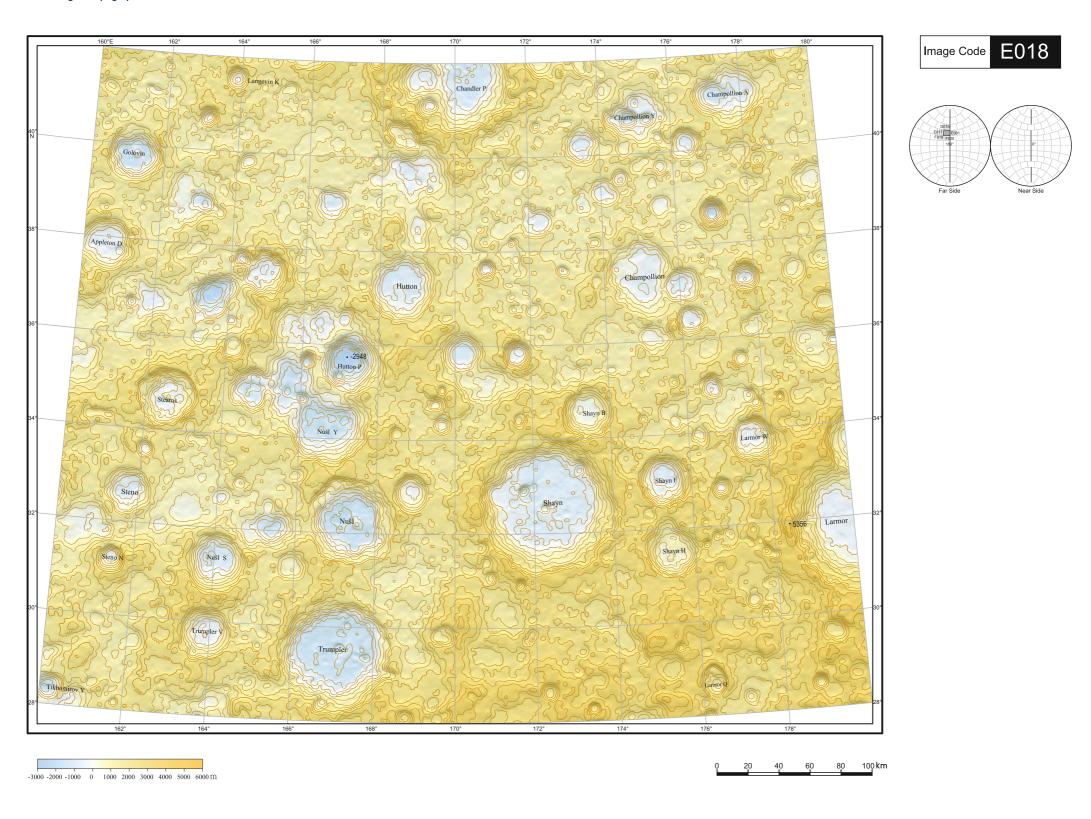


Image Code F001 Fitzgerald Mineur X Dante E Mineur V Jackson X Dante G Marci C Jackson McMath McMath J 174° 164° 80 100 km

-4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 7000 8000 m

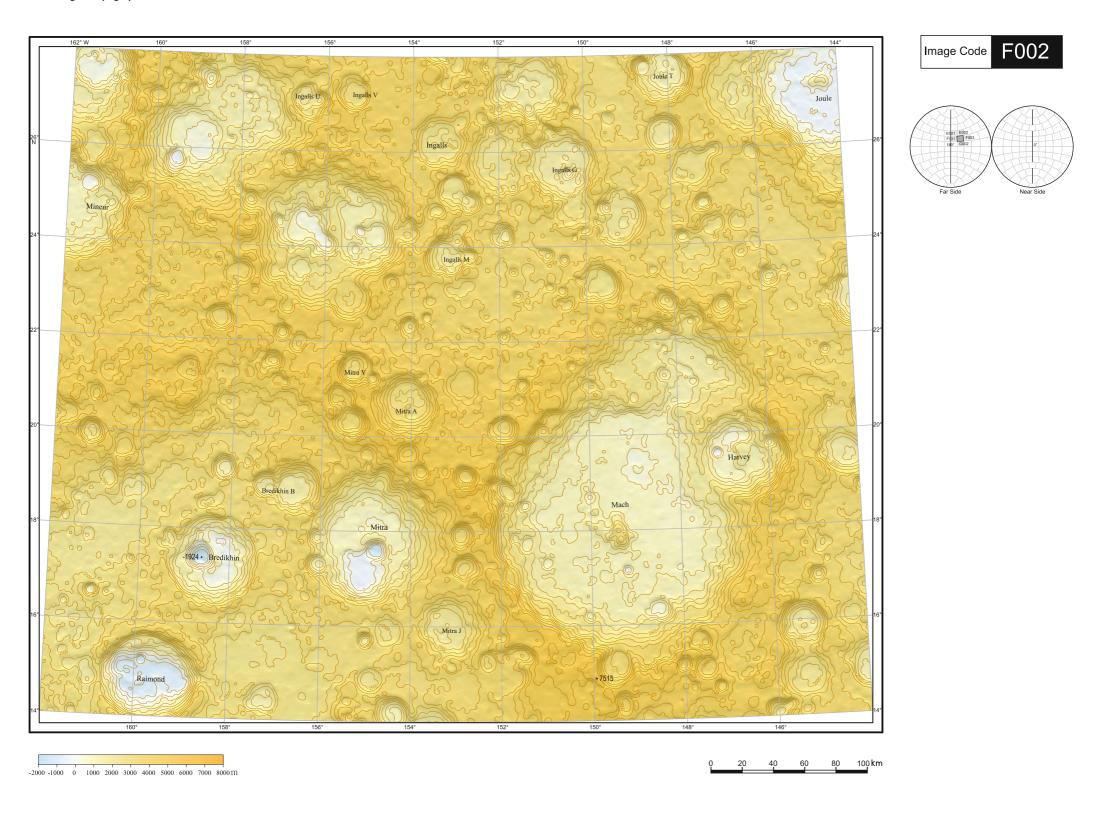


Image Code F003 Bobone Foster Eoster S Foster L Foster P Kekulé -6396 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 7000 m

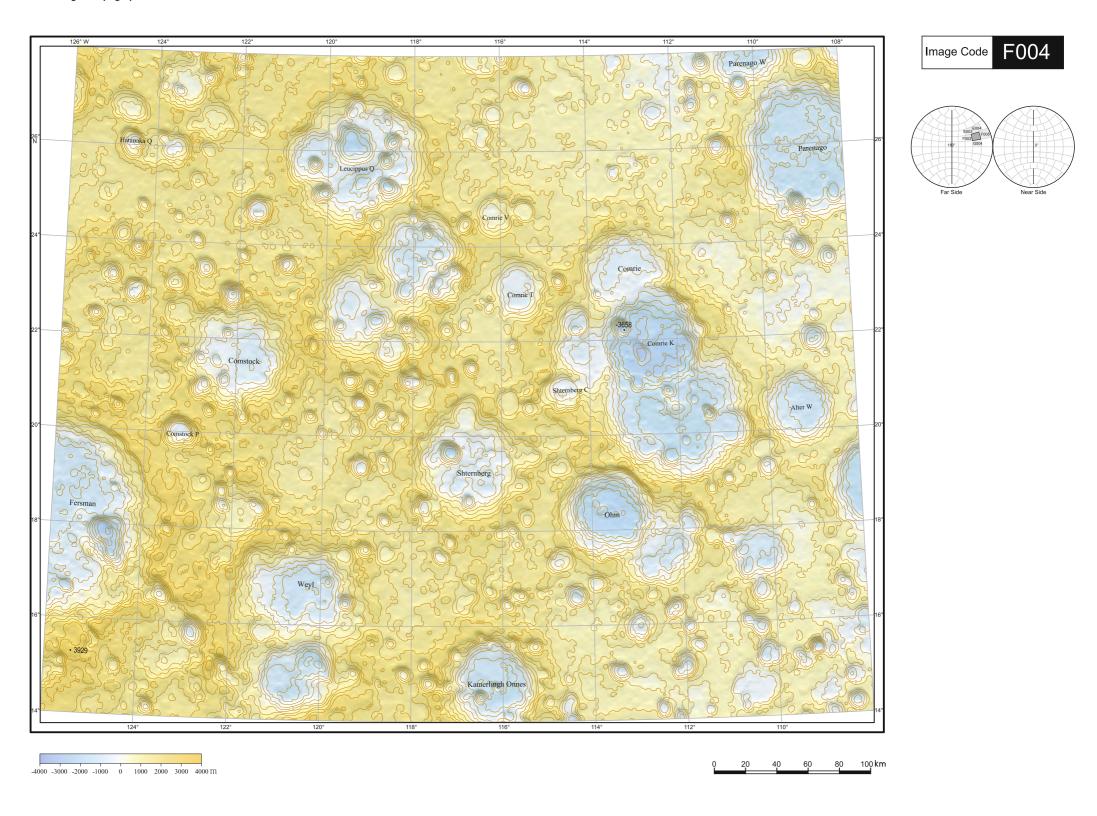


Image Code F005 • 3375 Helberg H

80 100 km

-5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 m

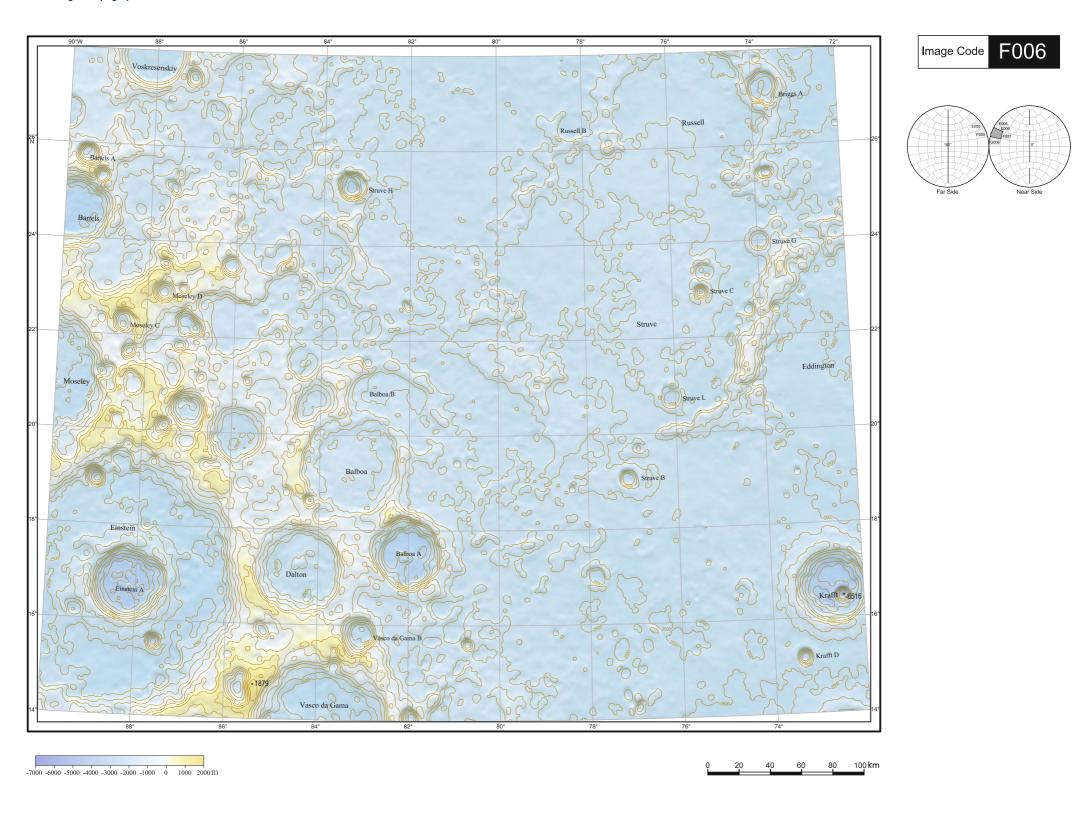
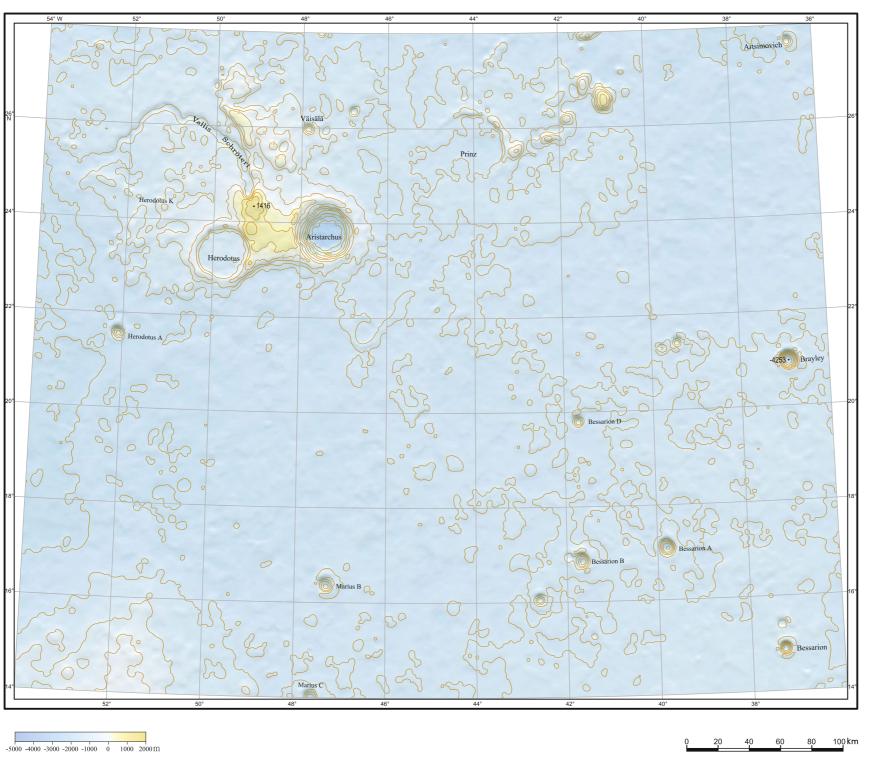


Image Code F007 Schiaparelli Seleucus OCEANUS PROCELLARUM

80 100 km

-5000 -4000 -3000 -2000 -1000 0 m

674



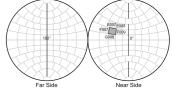


Image Code F009 Lambert 4776 T. Mayer

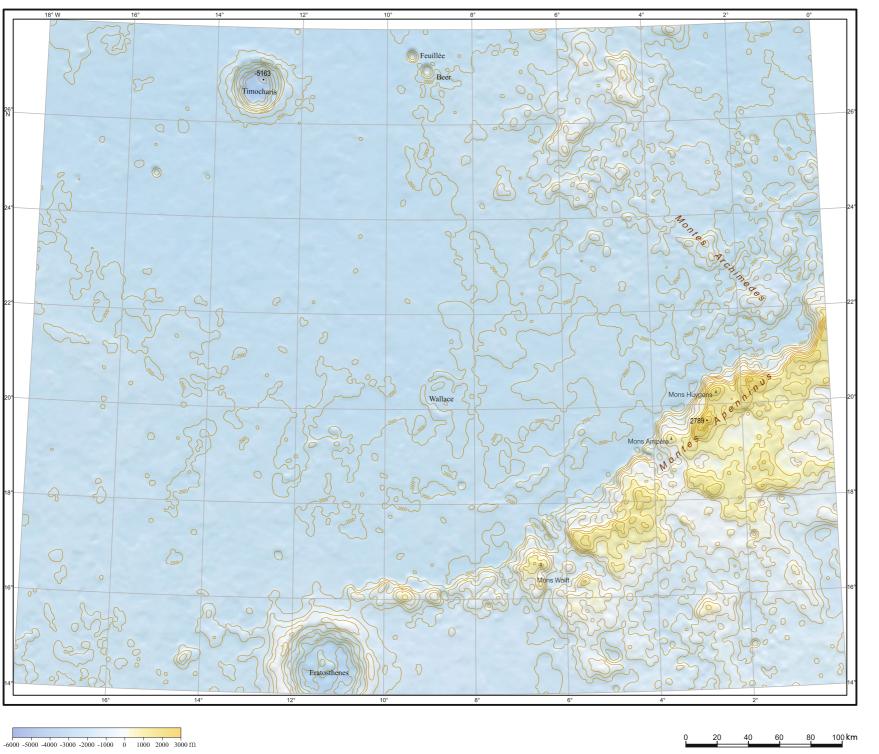
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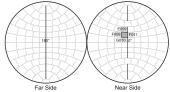
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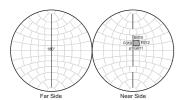
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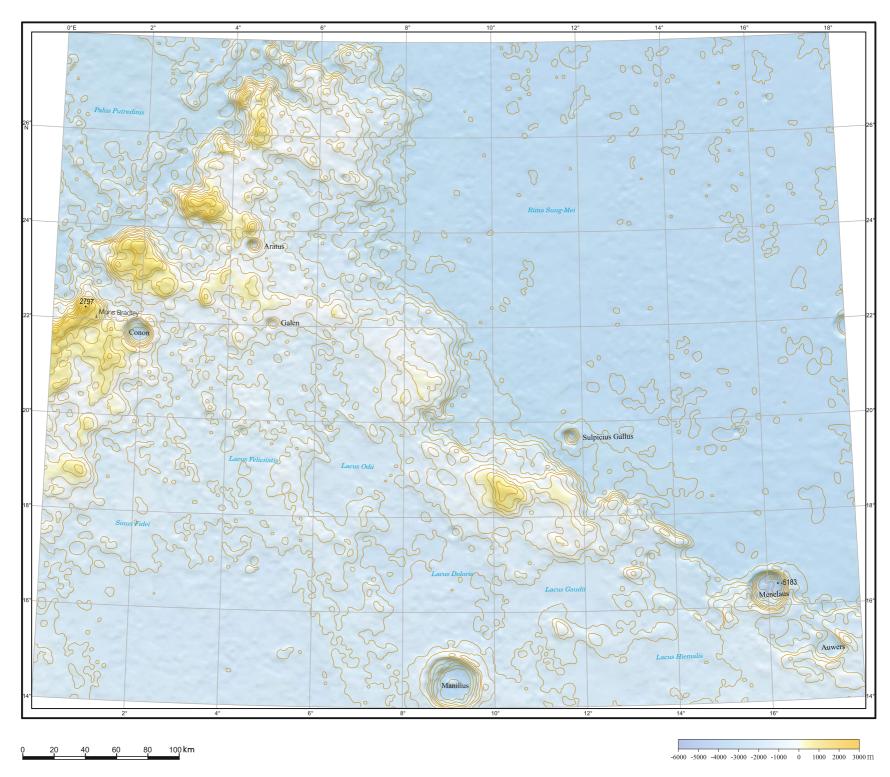
100 km

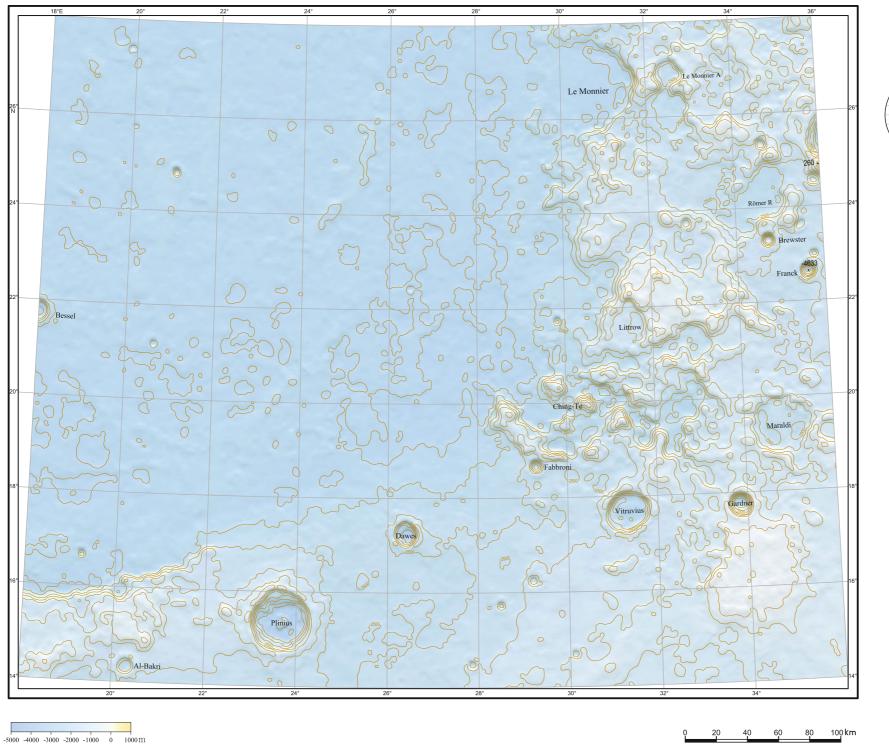
-5000 -4000 -3000 -2000 -1000 0 1000 2000 m

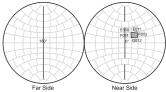


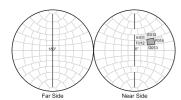


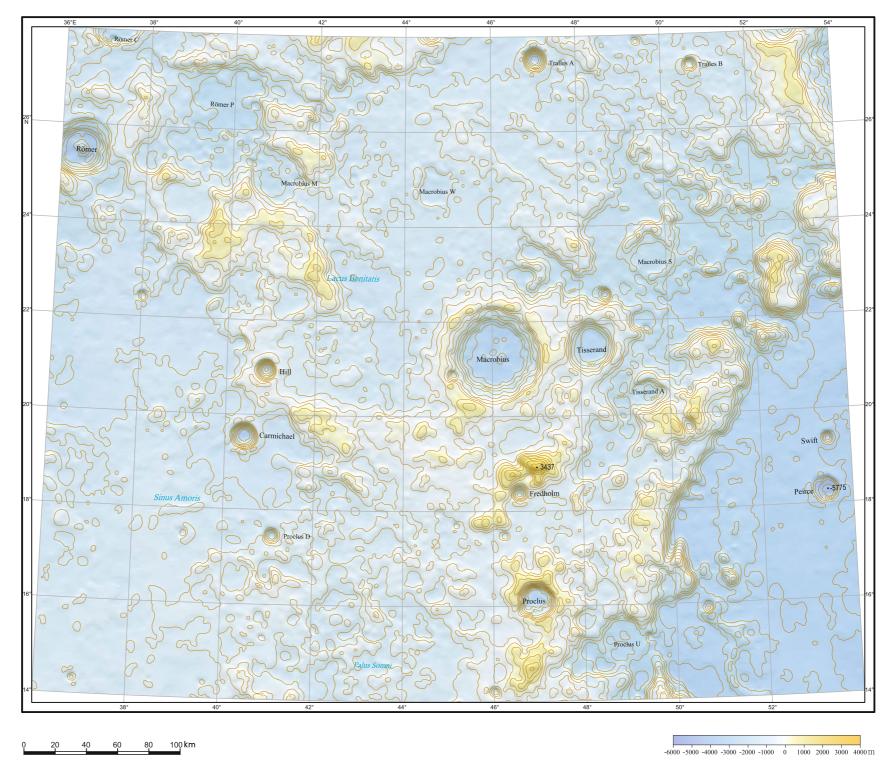


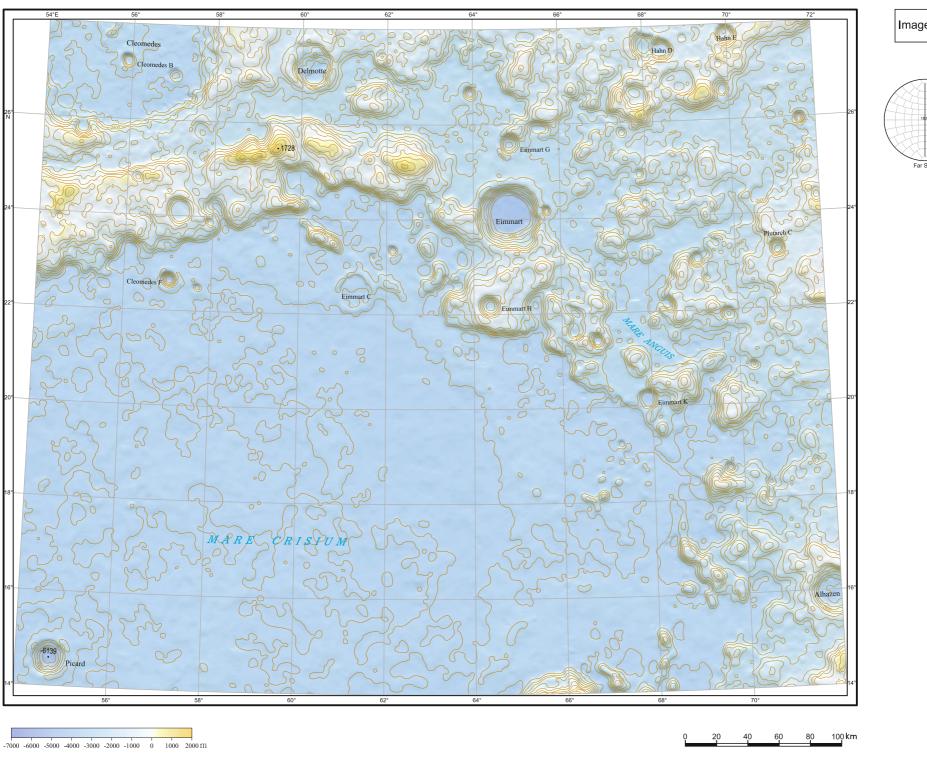


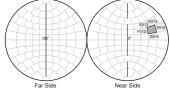


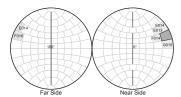


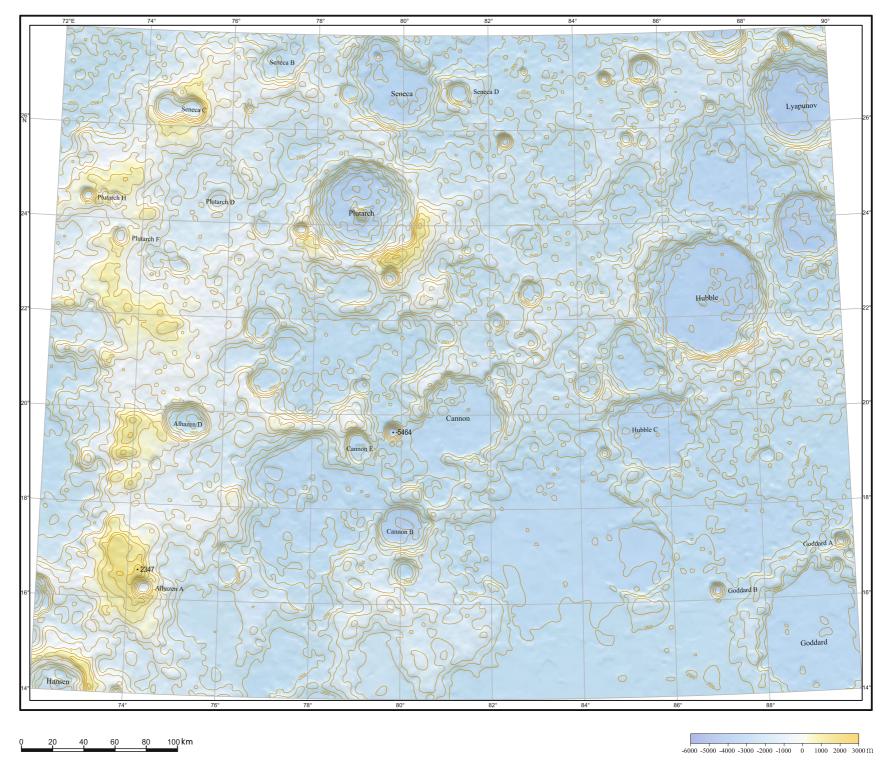


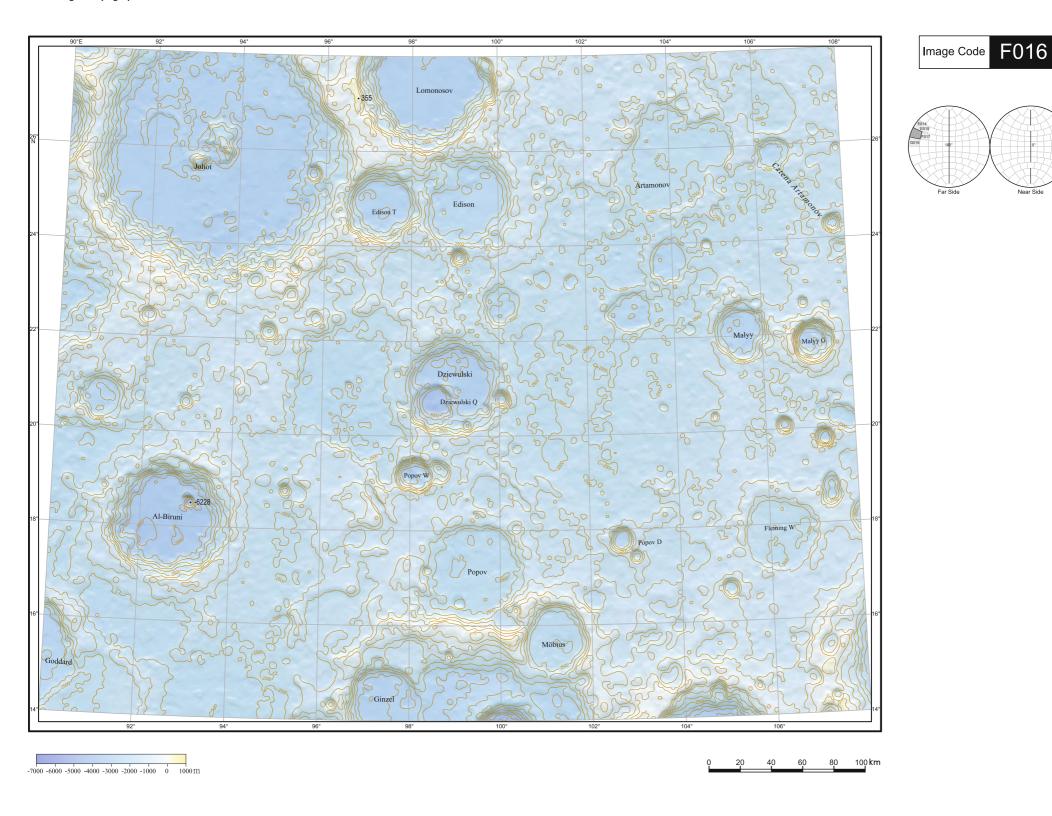


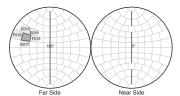


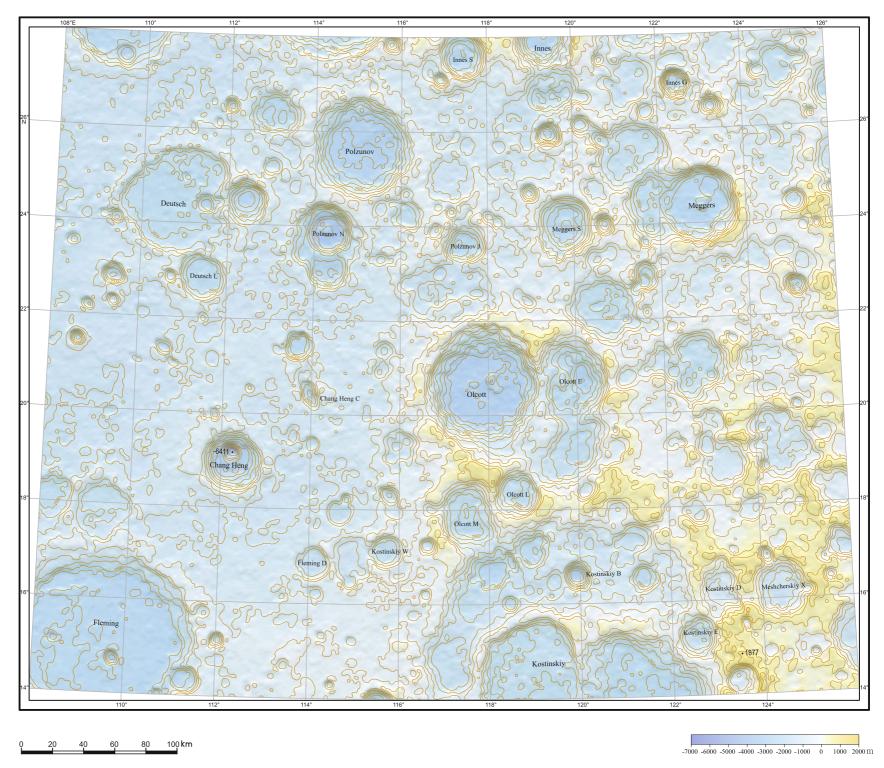


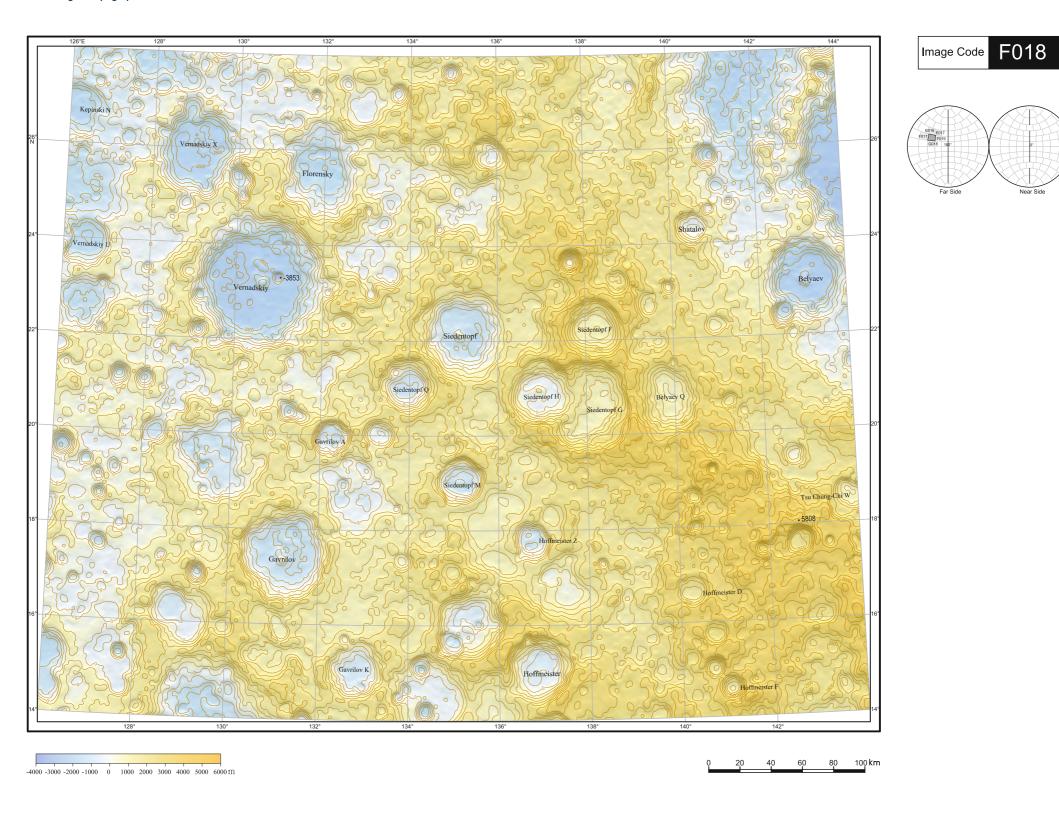


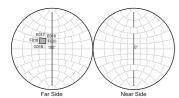


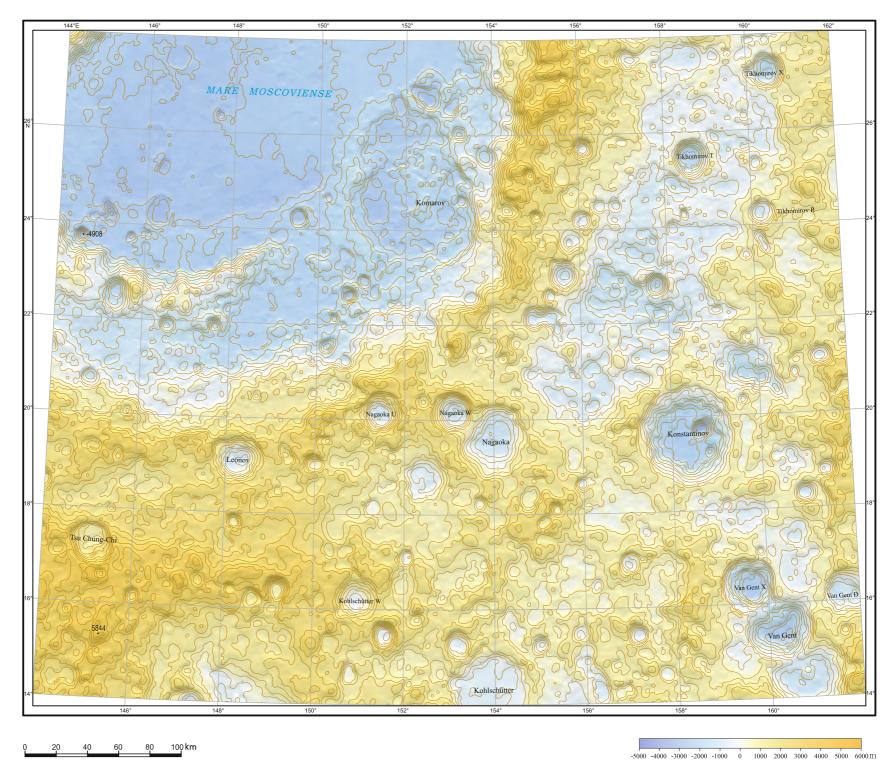


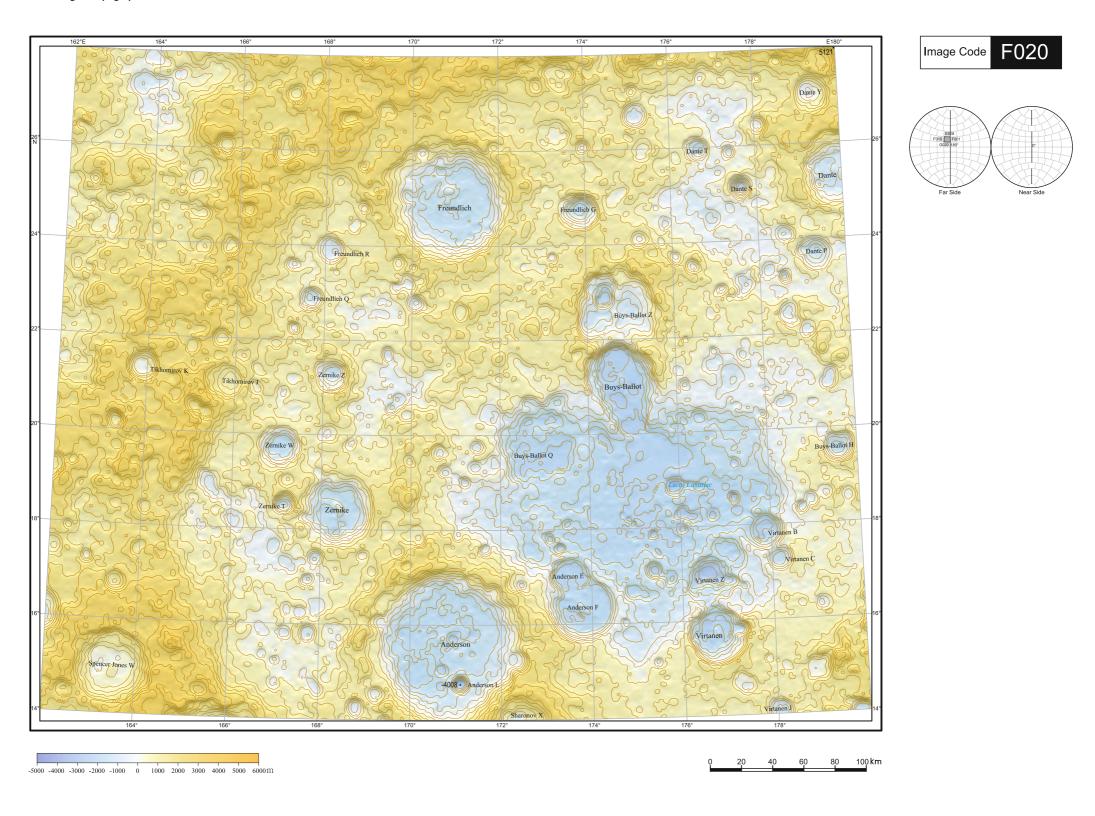


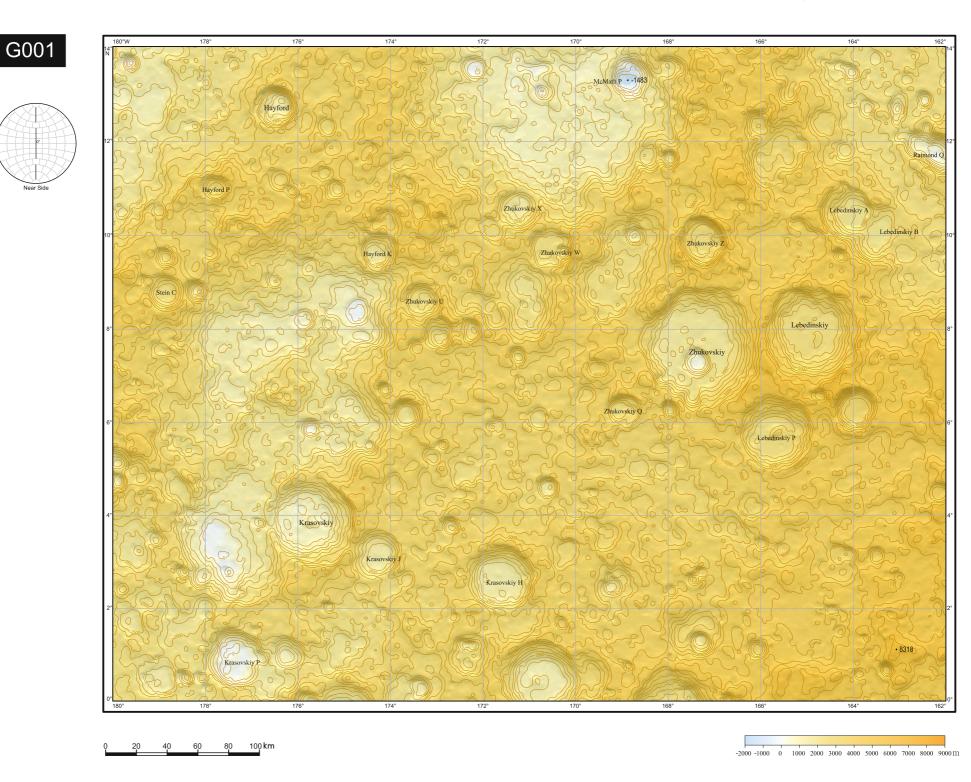


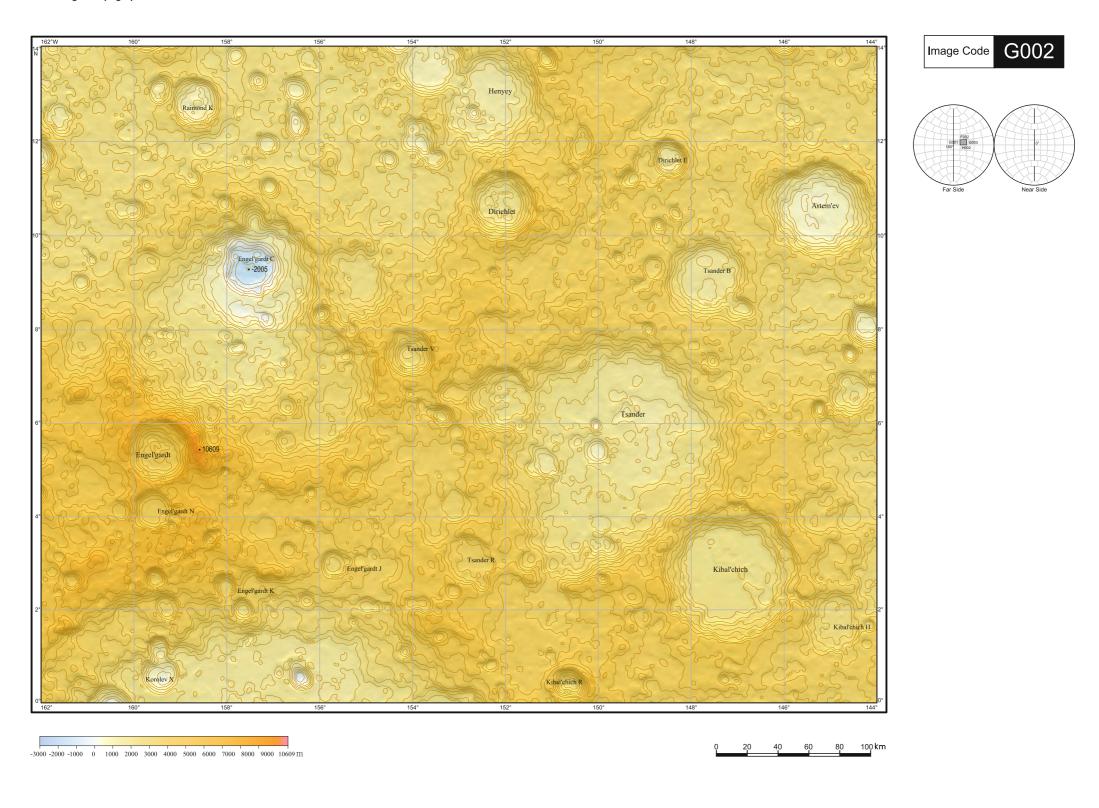


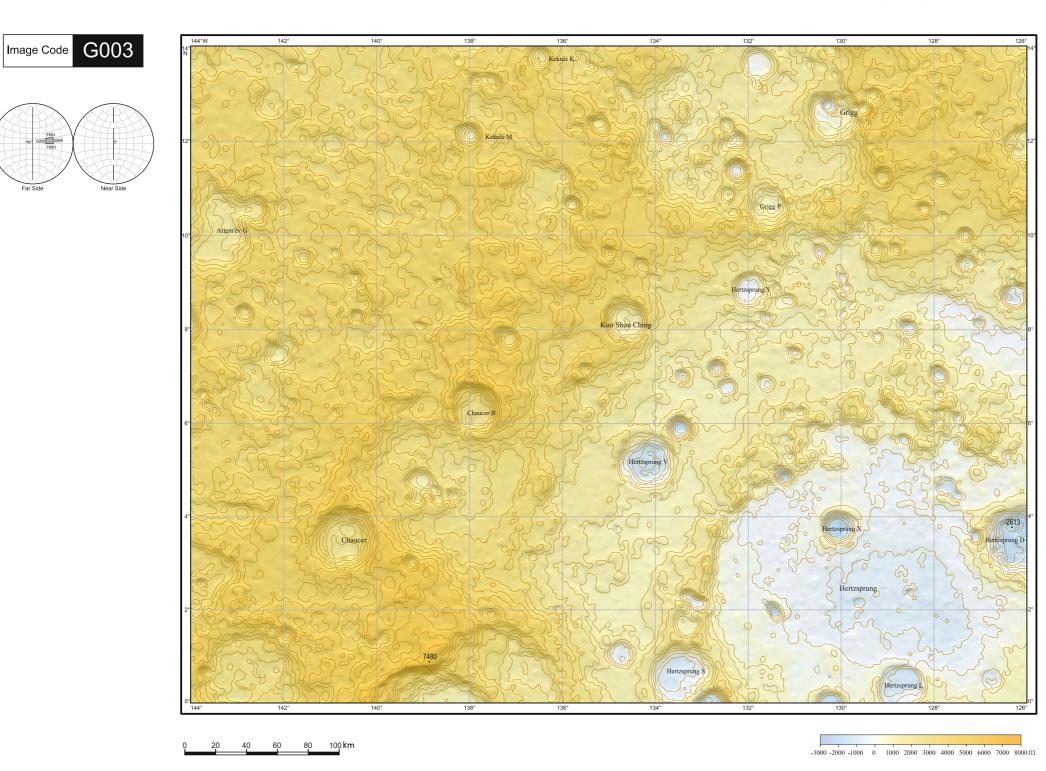


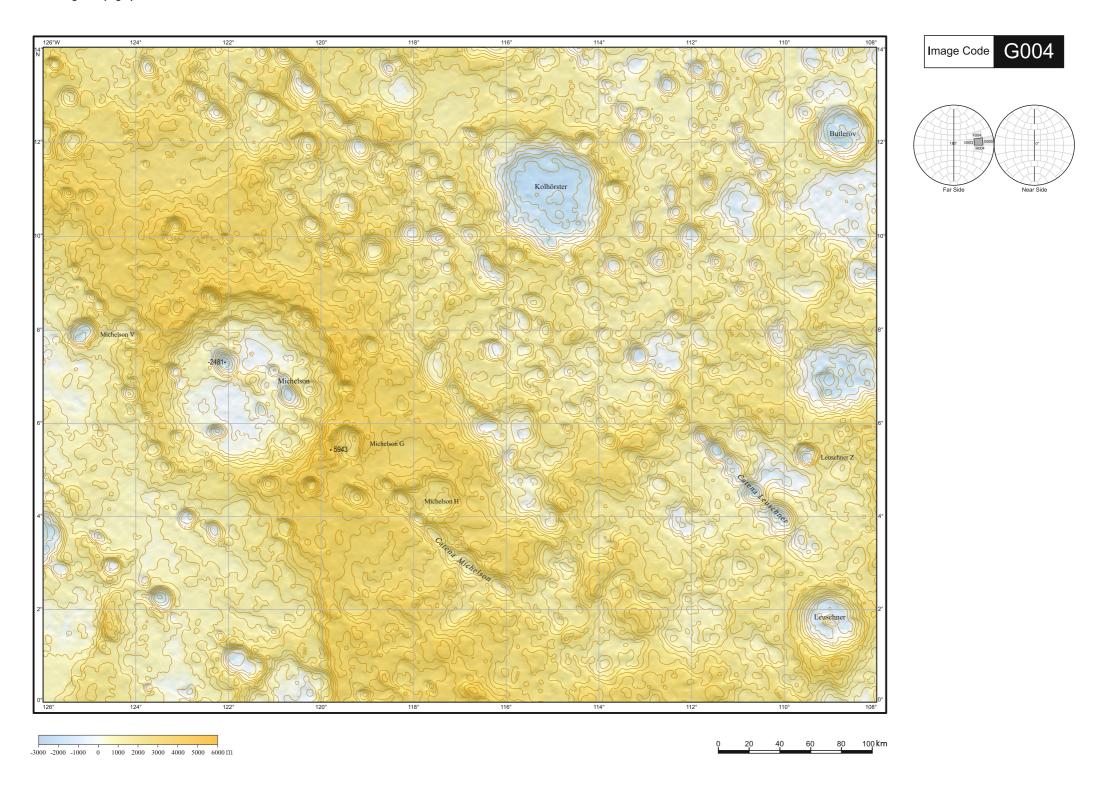


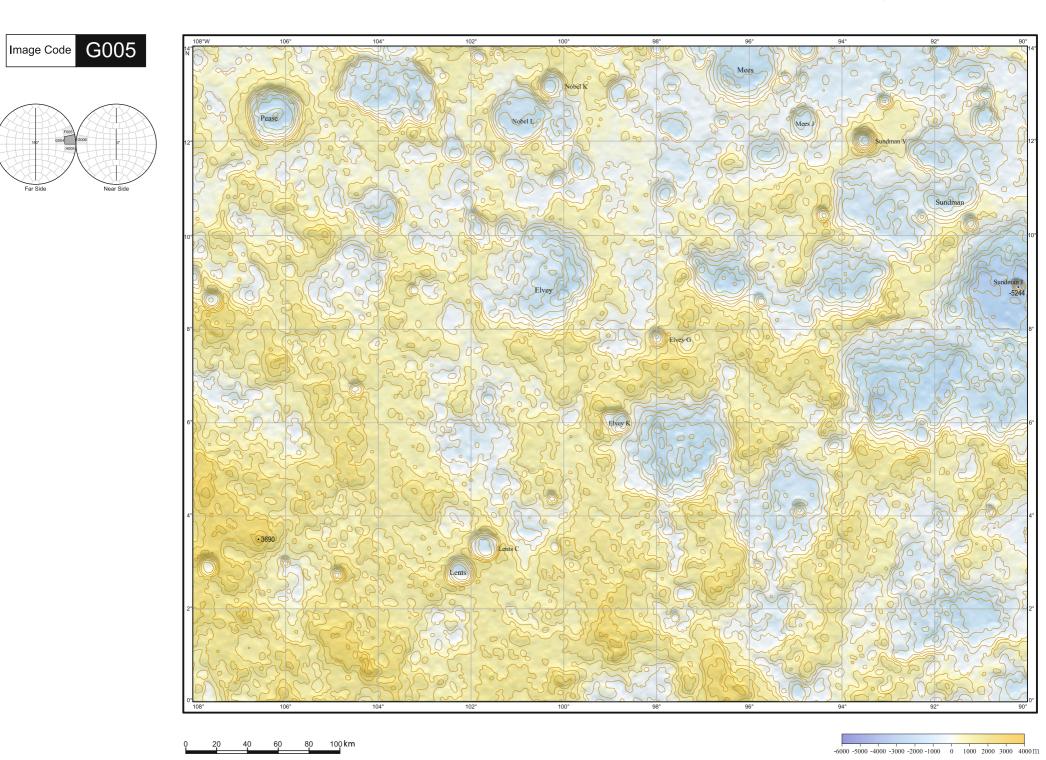


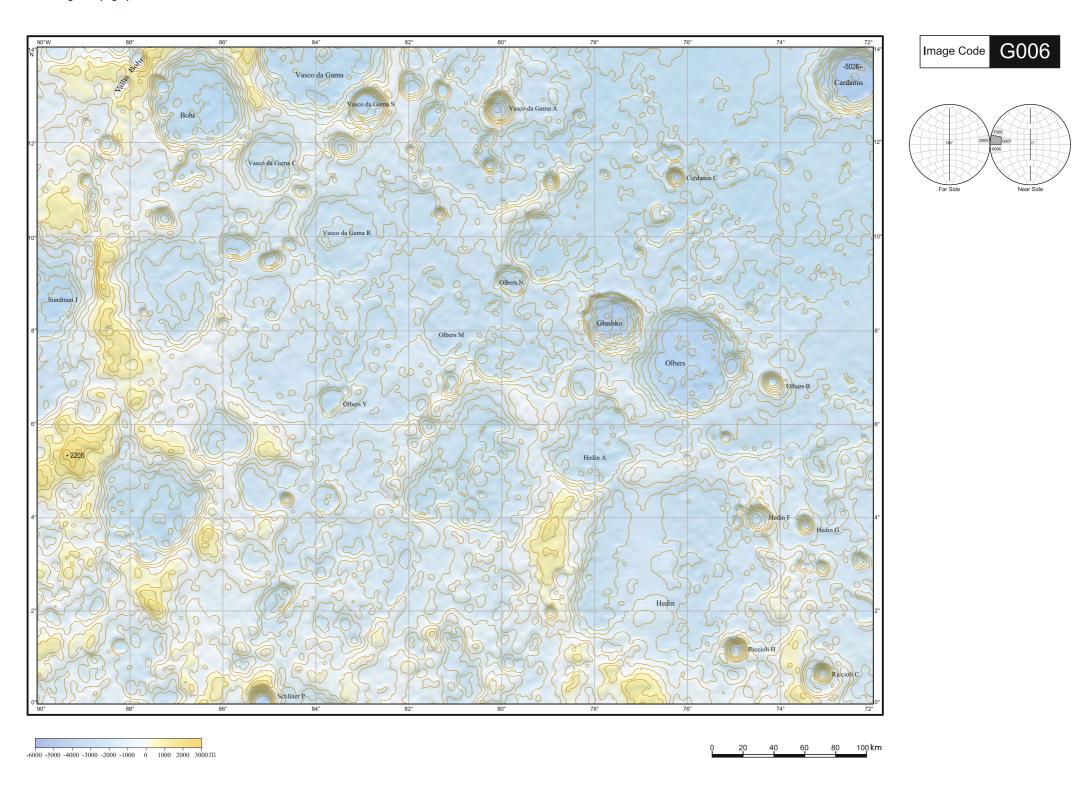


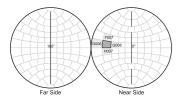


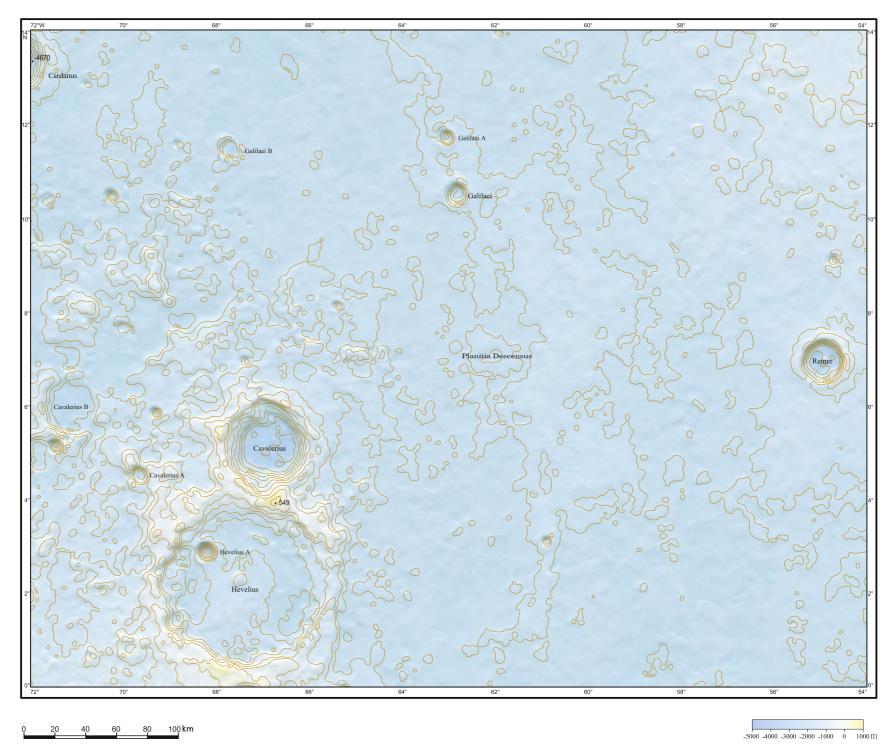


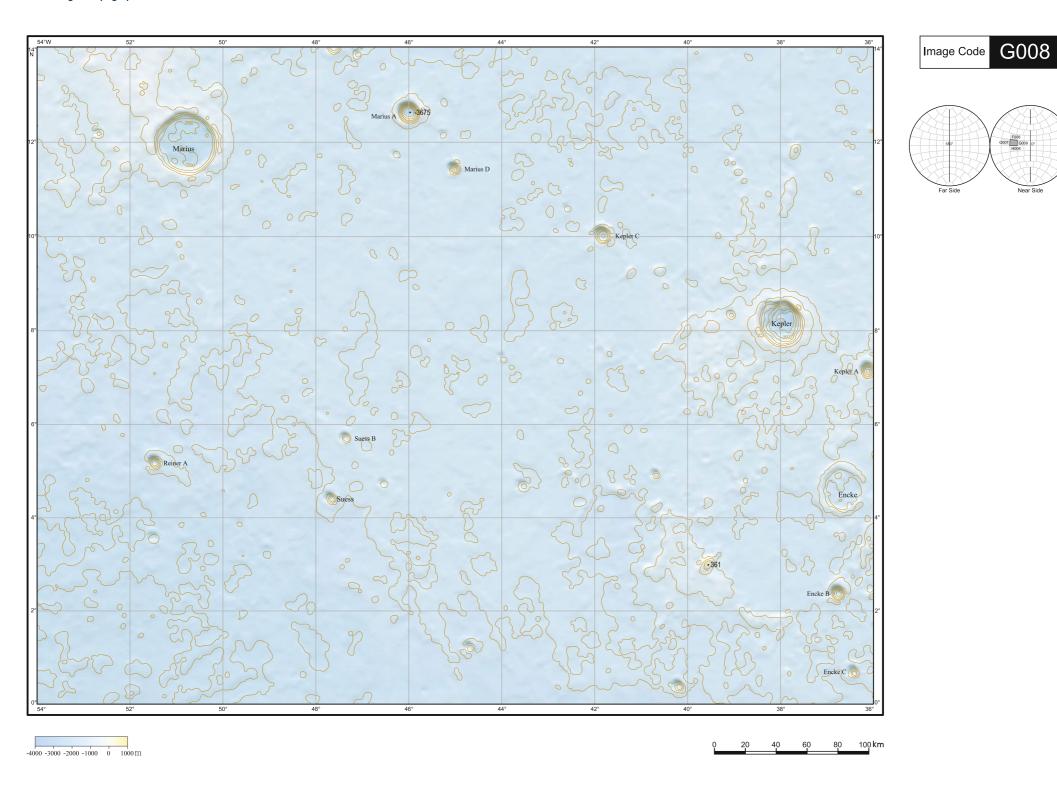










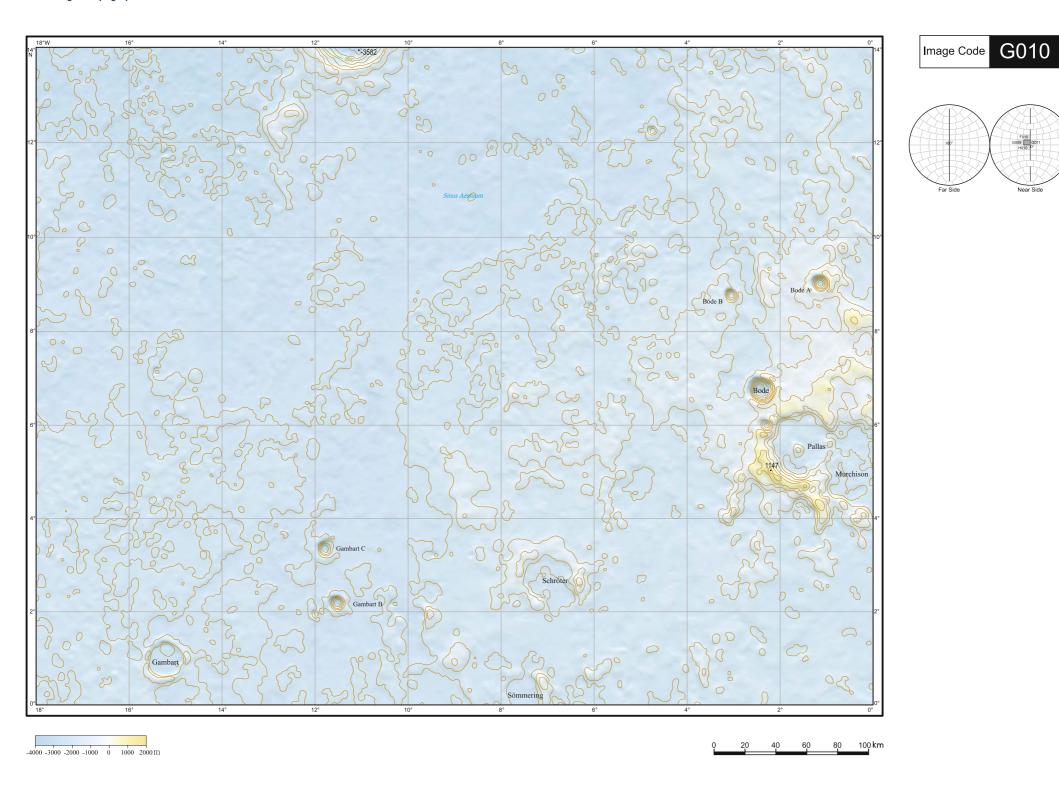


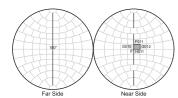
G009 Image Code MARE INSULARUM 8

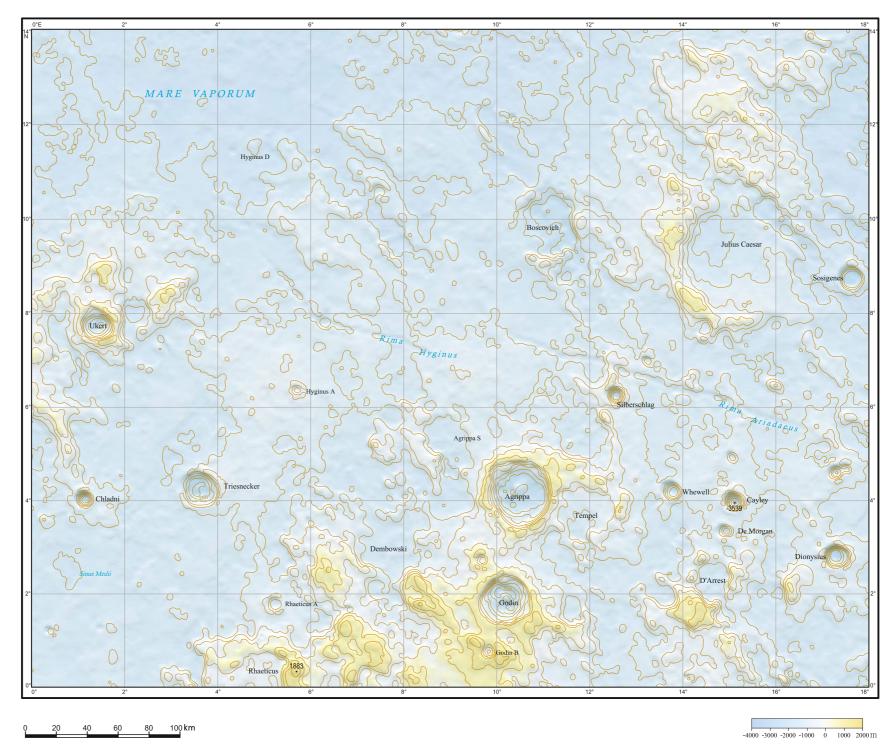
80 100 km

60

-5000 -4000 -3000 -2000 -1000 0 1000 m

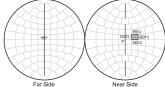






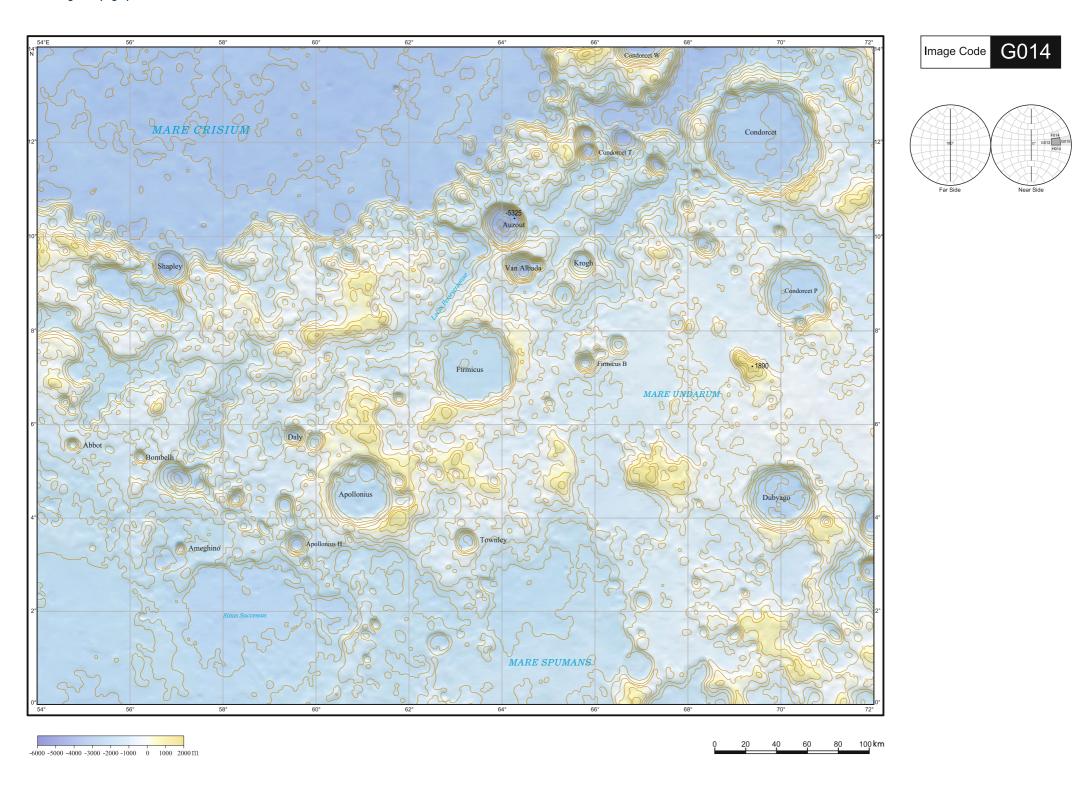






G013 Image Code Lick Tebbutt

-7000 -6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 m



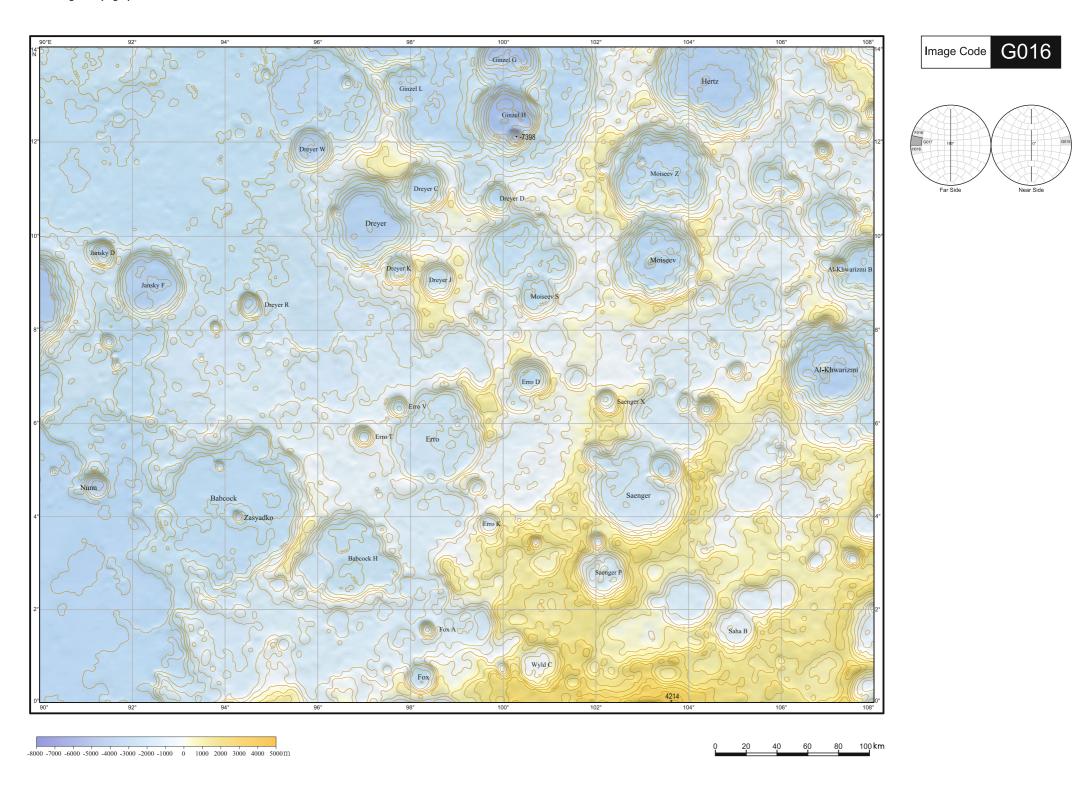
G015 Image Code Hanson MARE MARGINIS Banachiewiez -5746 • 0 0 0 MARE SMYTHII

Jenkins

60

80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 m



G017 Image Code 4733 Ostwald Y LobachevskiyM Bingham H Ibn Firnas E Ibn Firnas King Y Katchalsky Al-Khwarizmi H Viviani Zanstra A Firsov S • 4687 Ctesibius Heron Soddy

116°

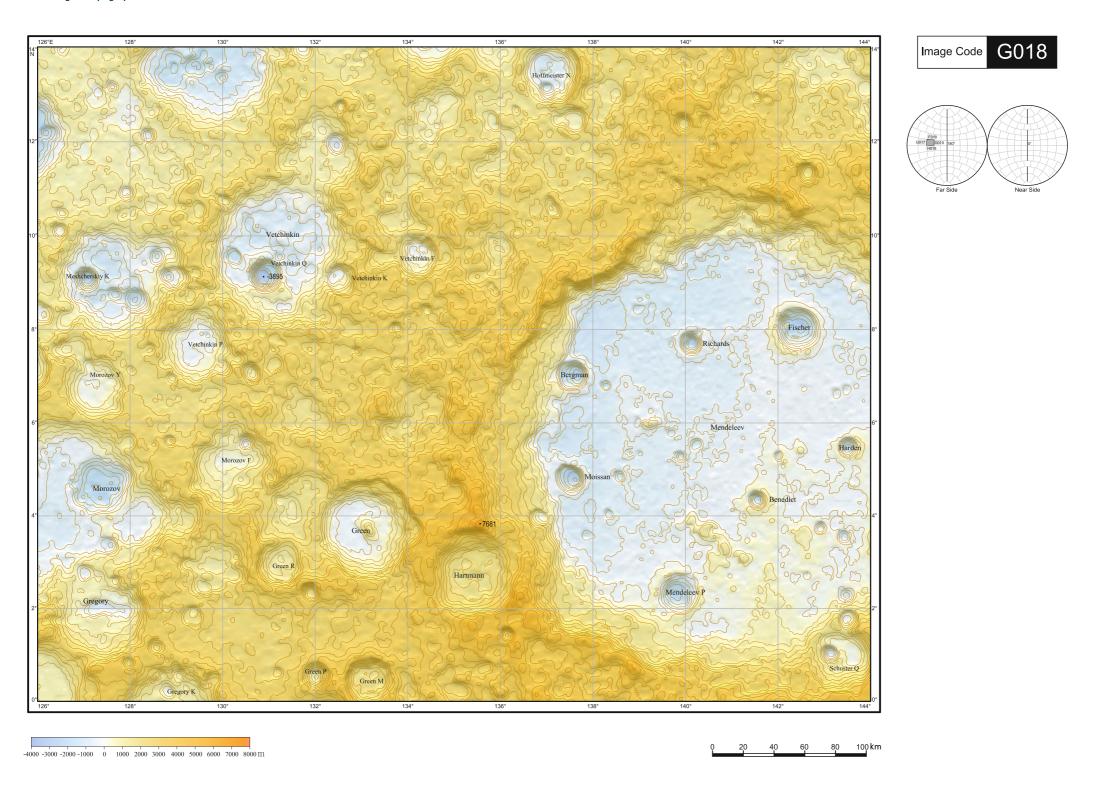
80 100 km

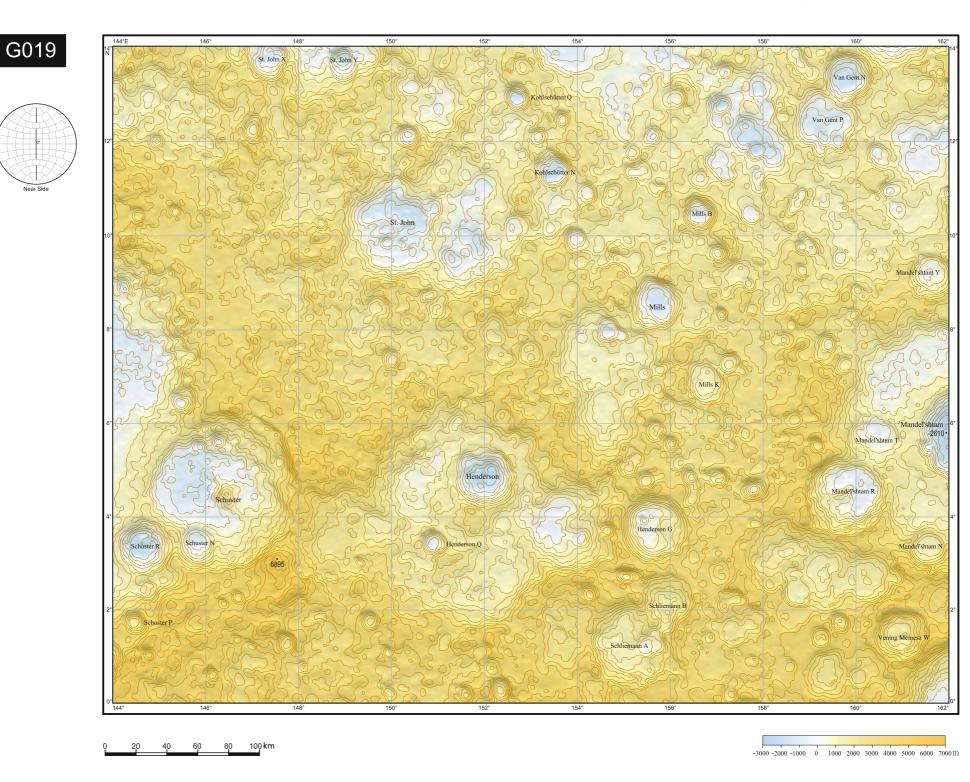
120°

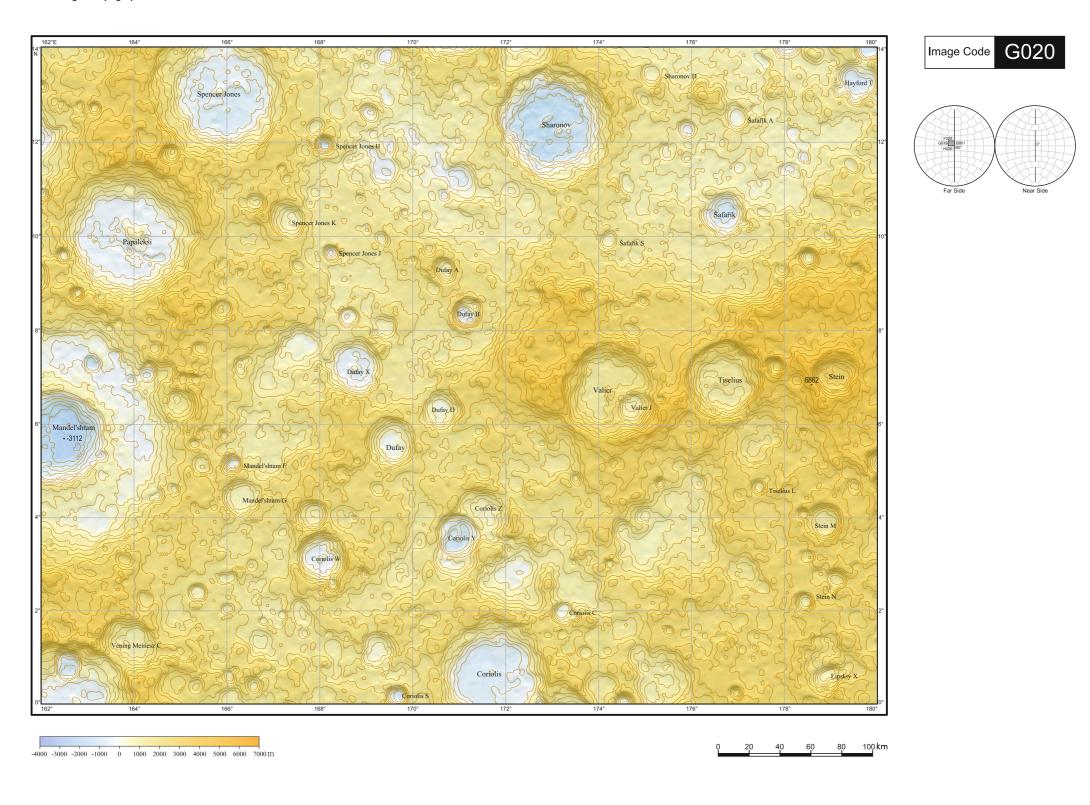
122°

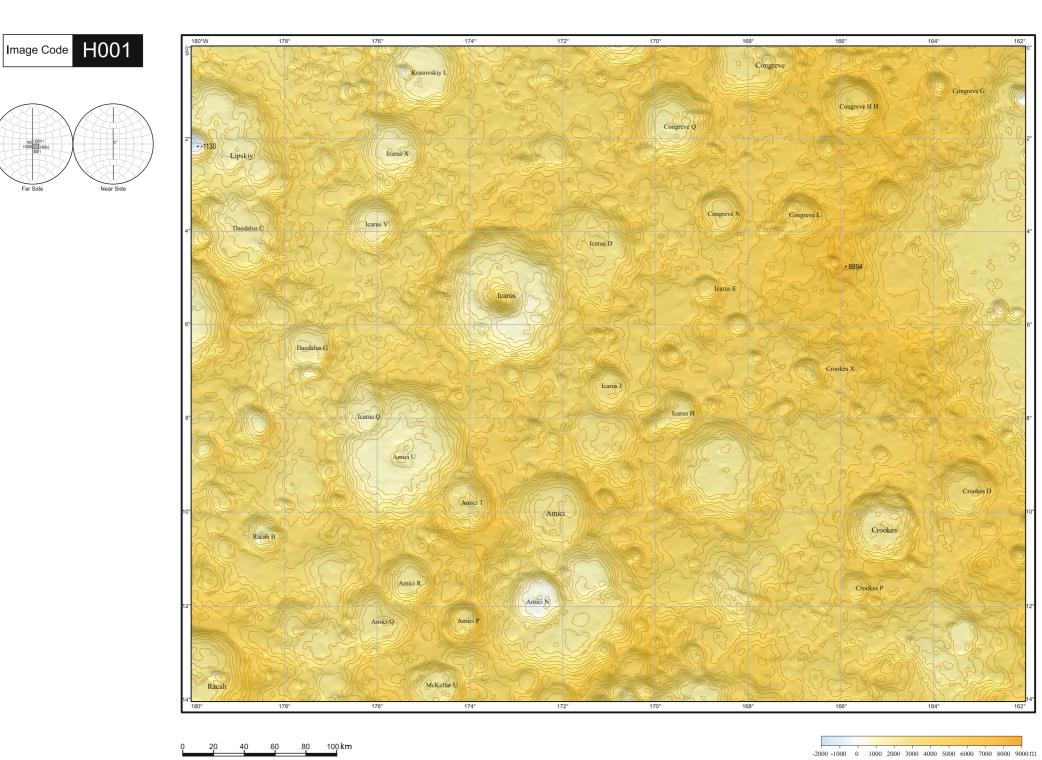
124°

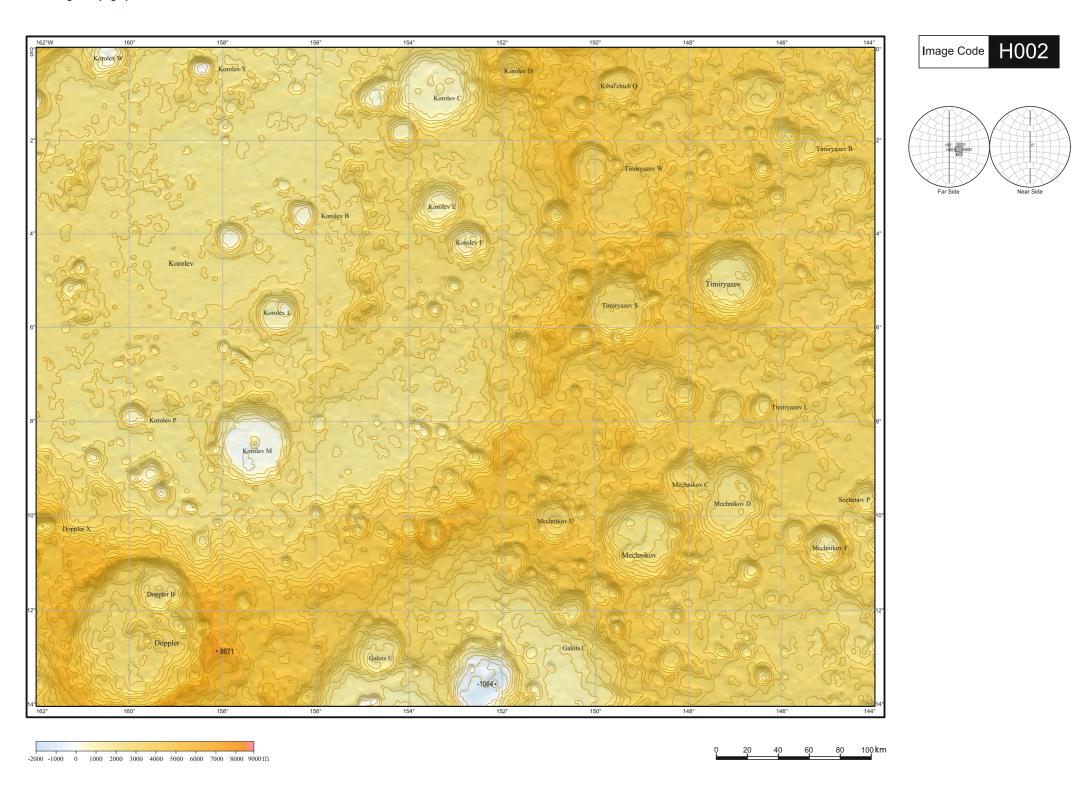
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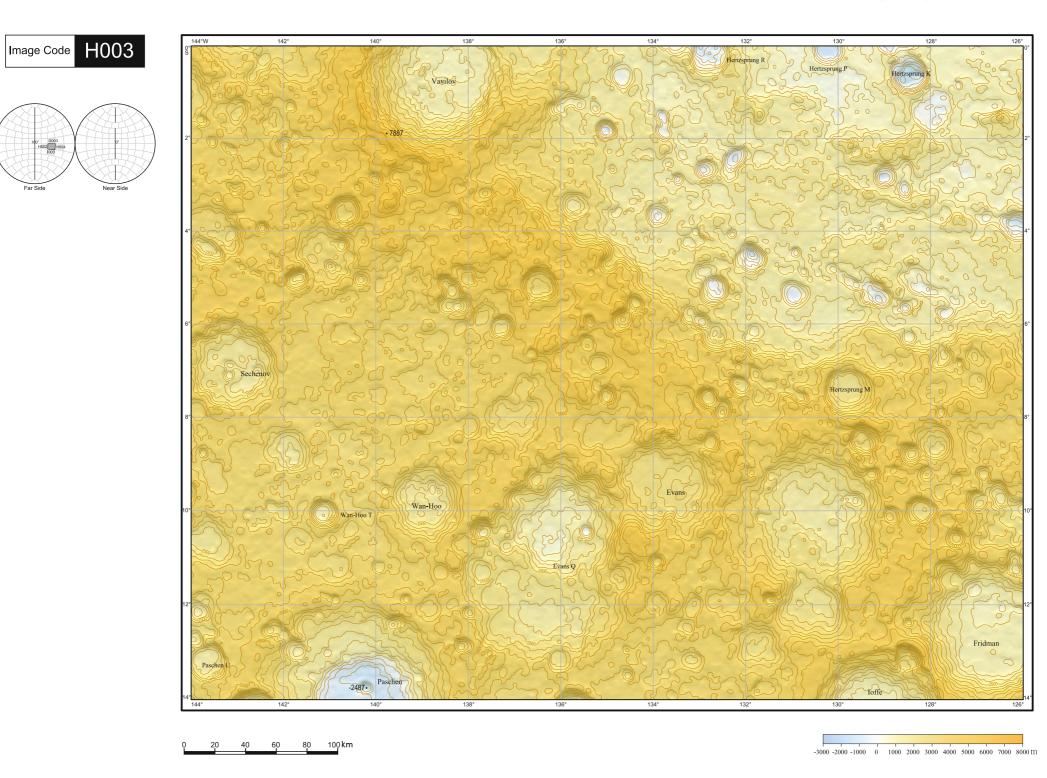












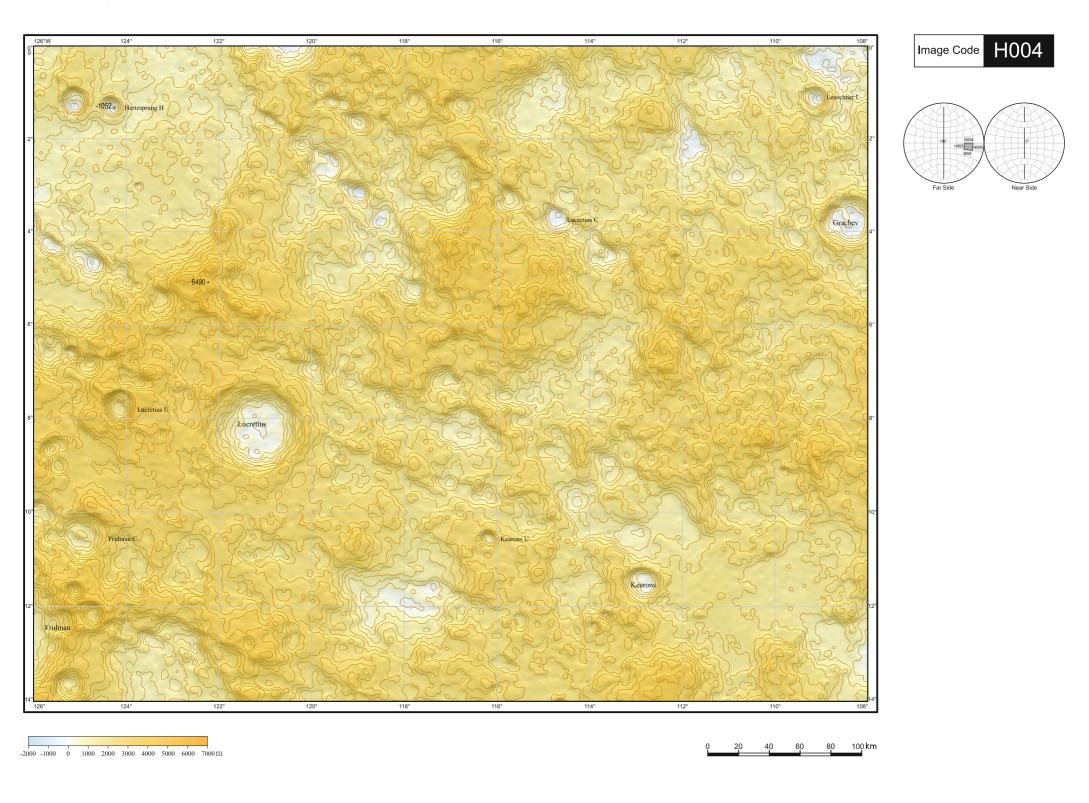
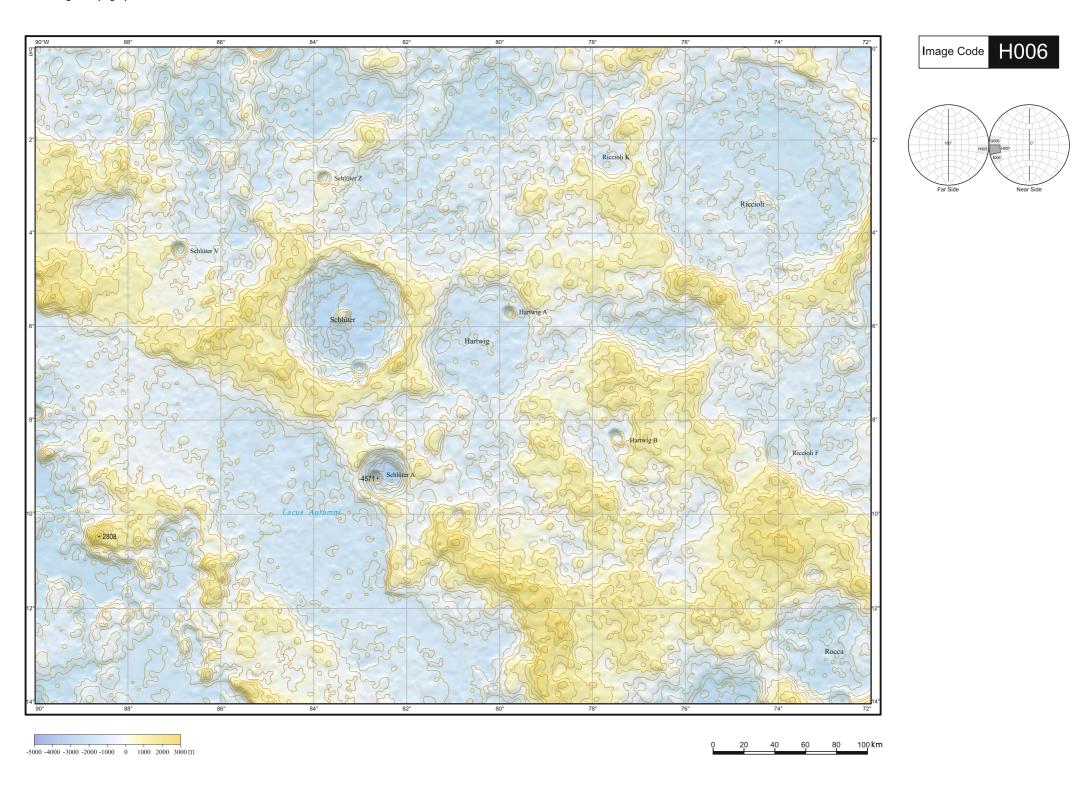
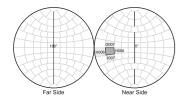
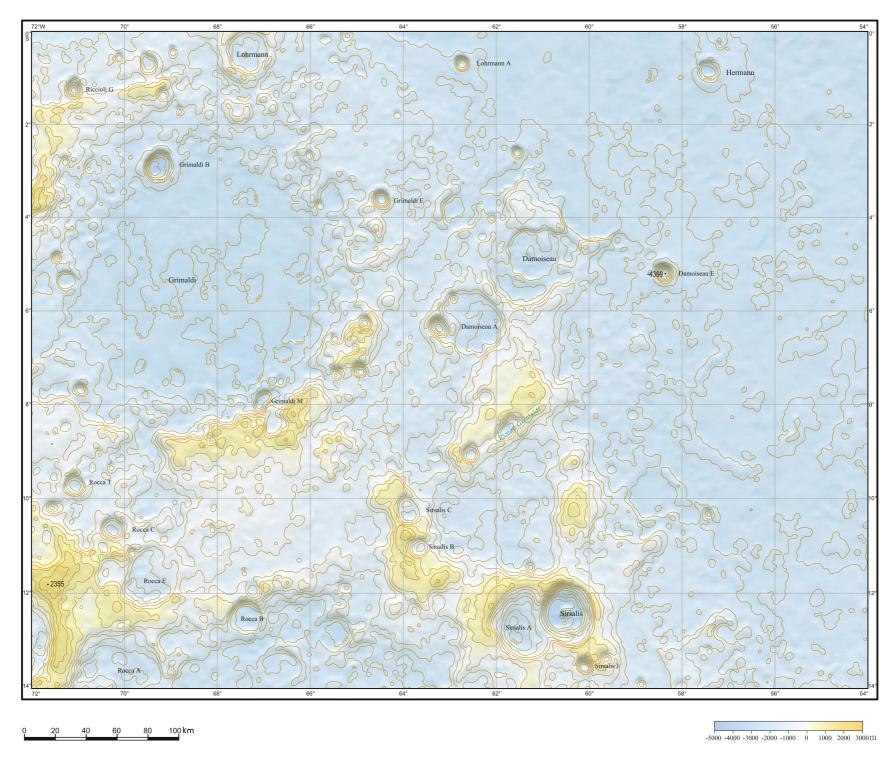
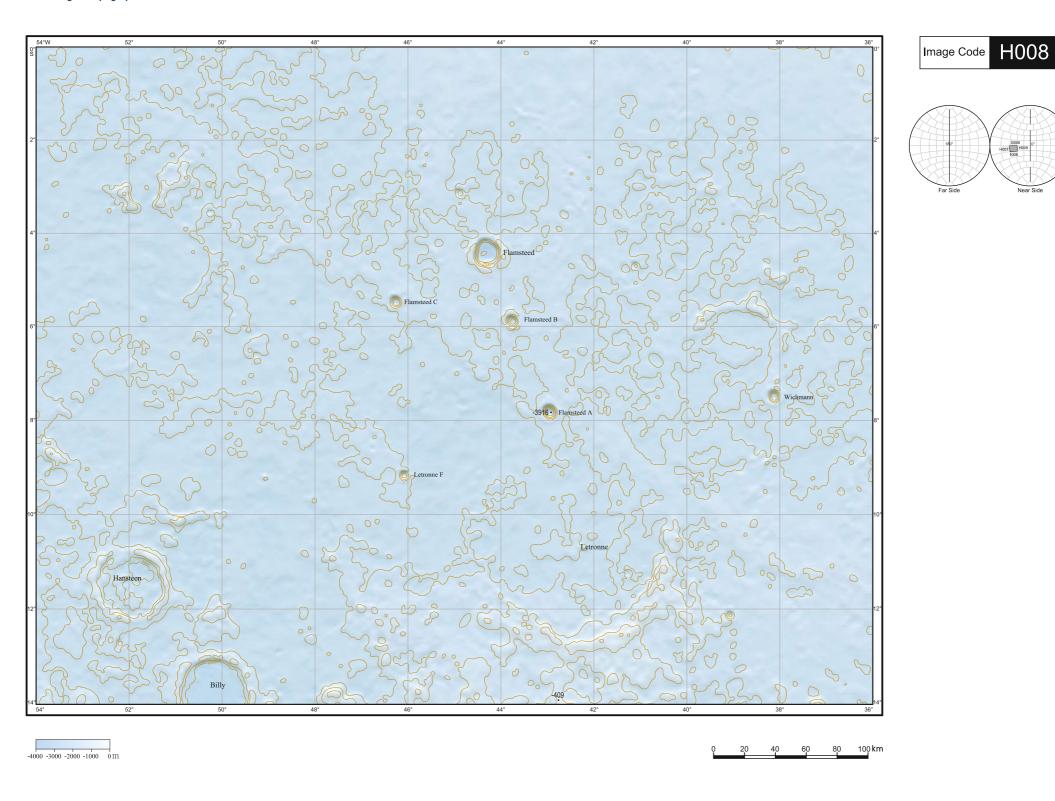


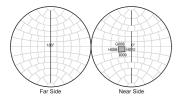
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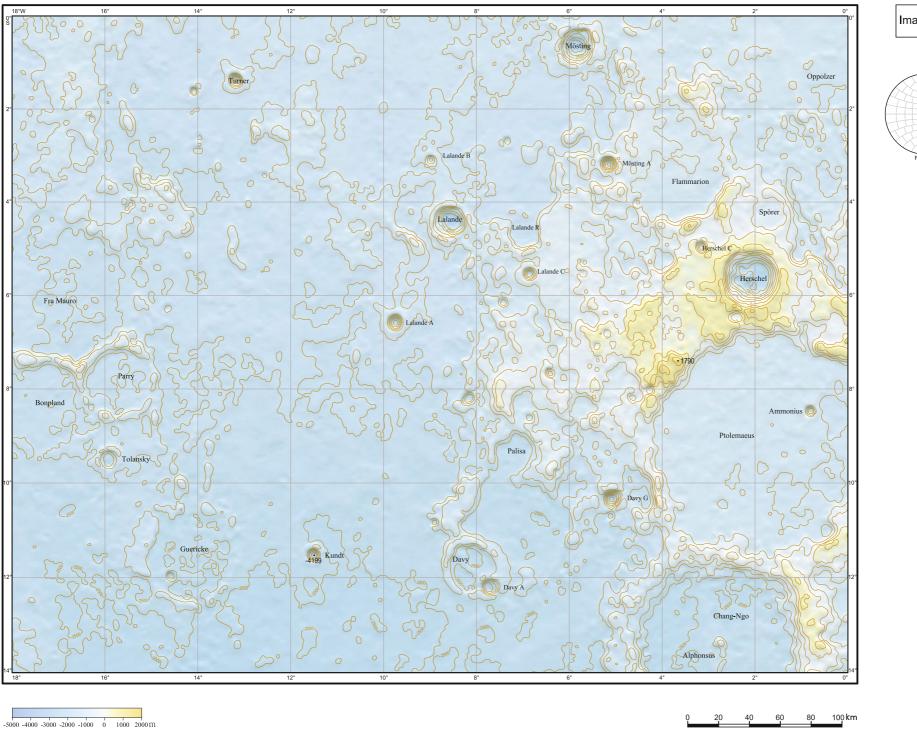




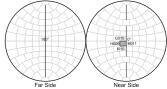


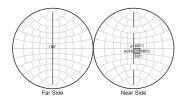


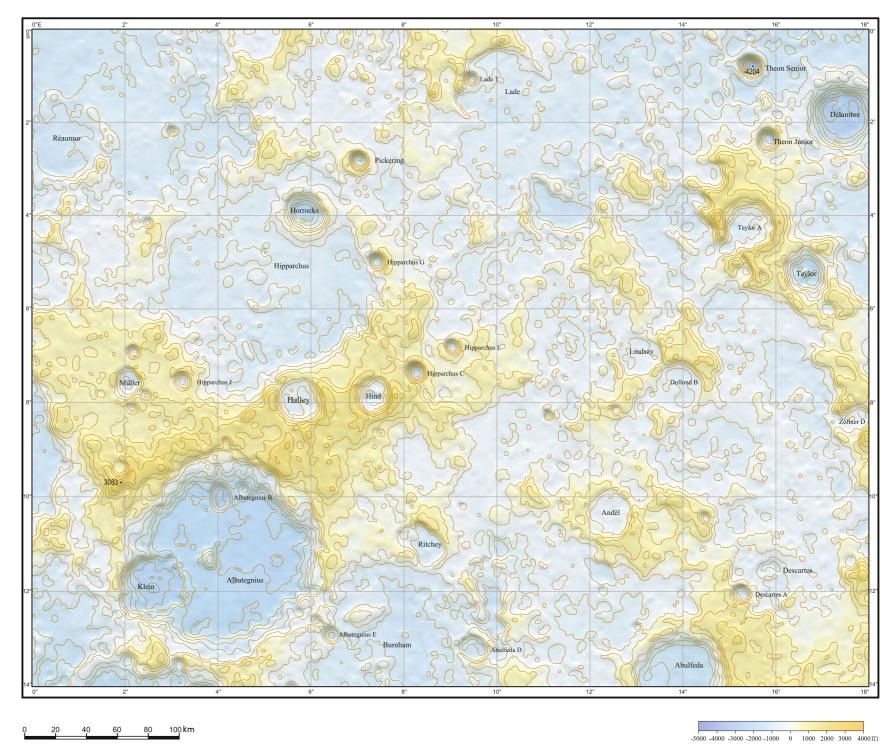


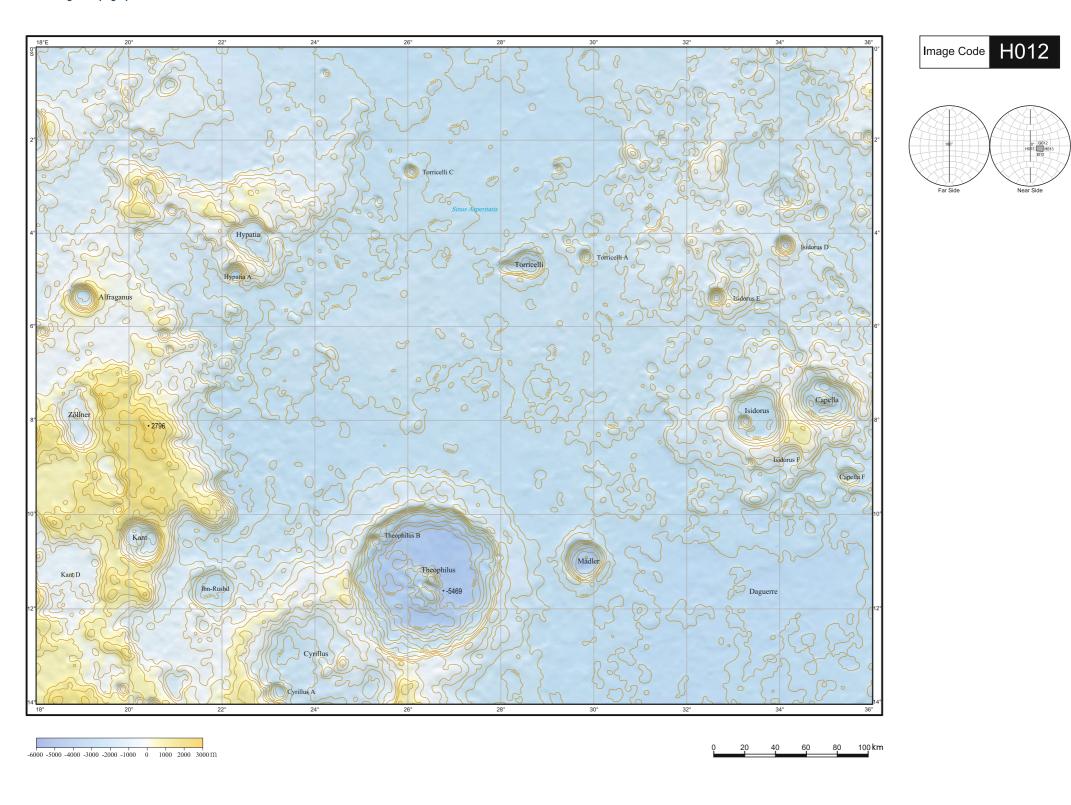


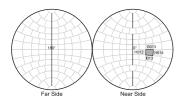


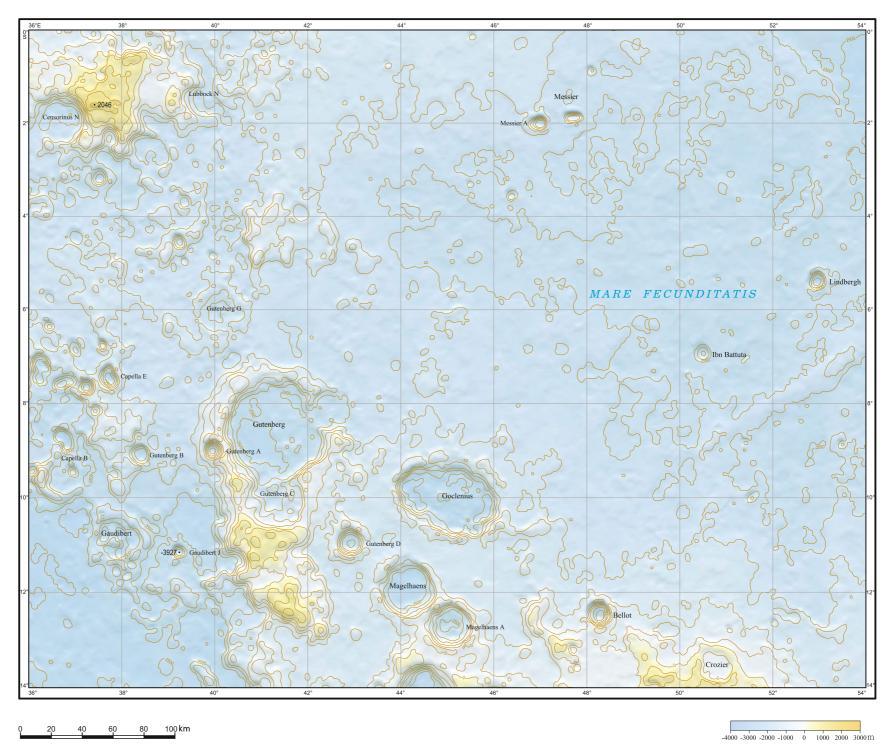


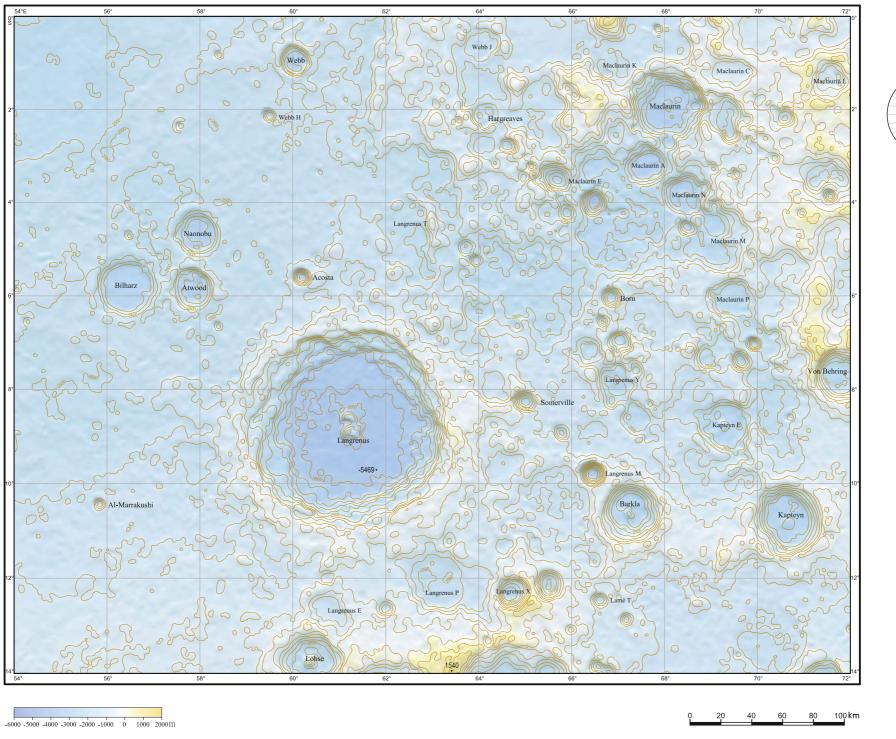


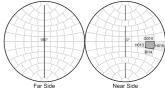


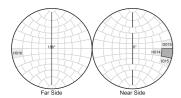


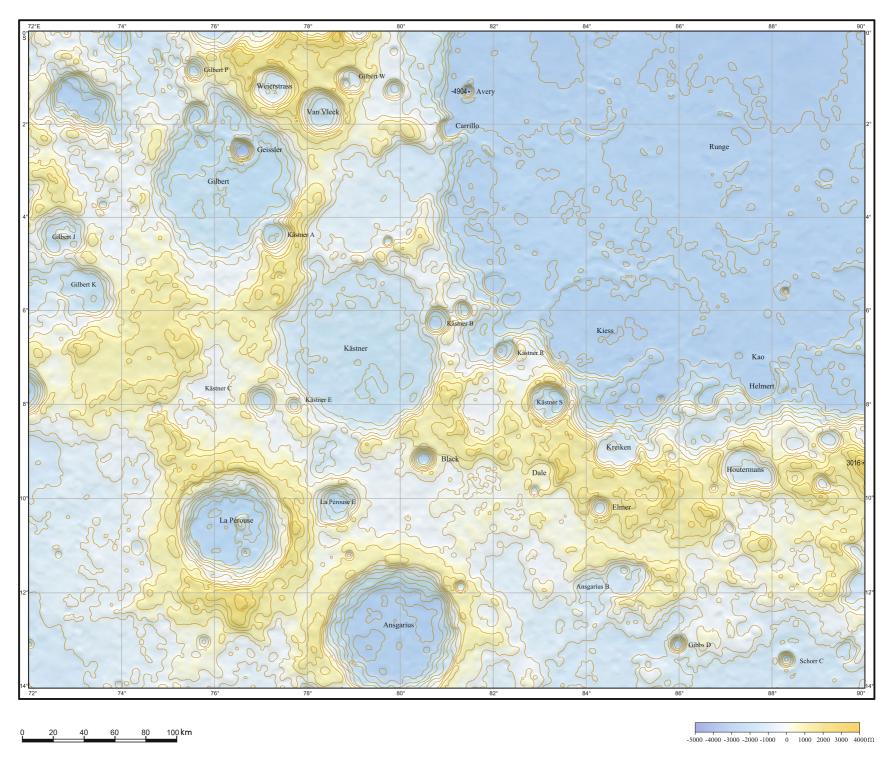


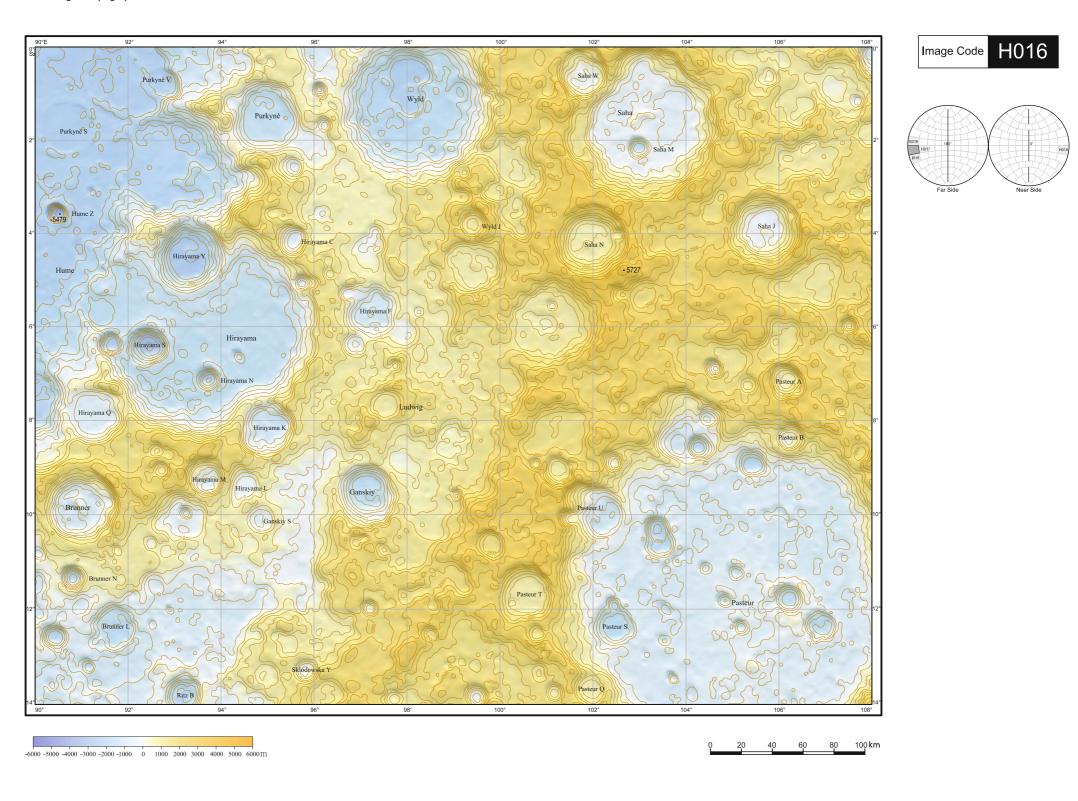


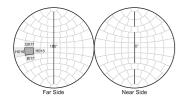


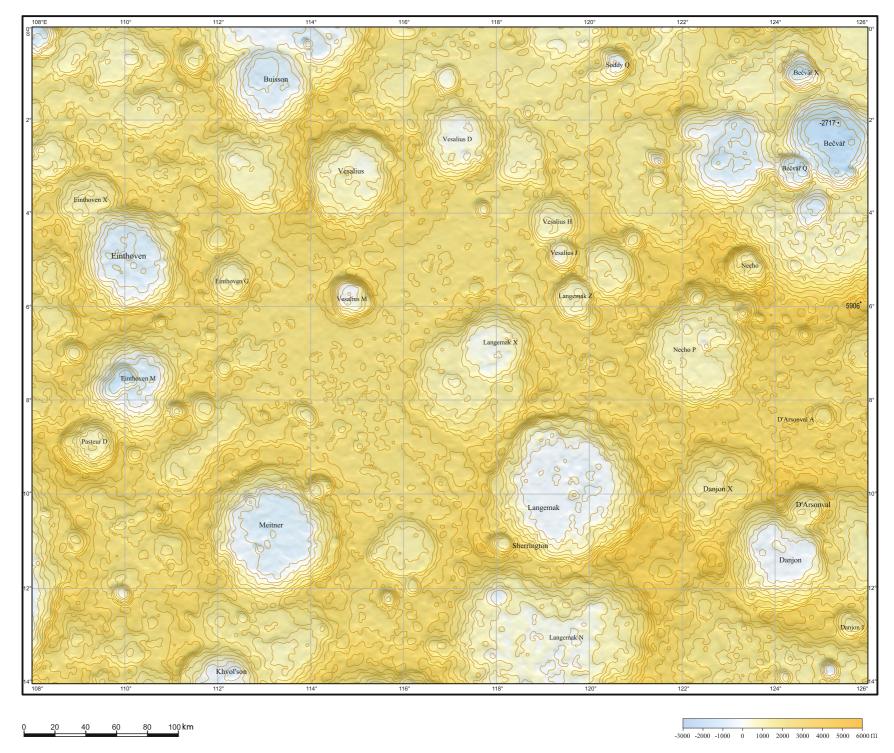












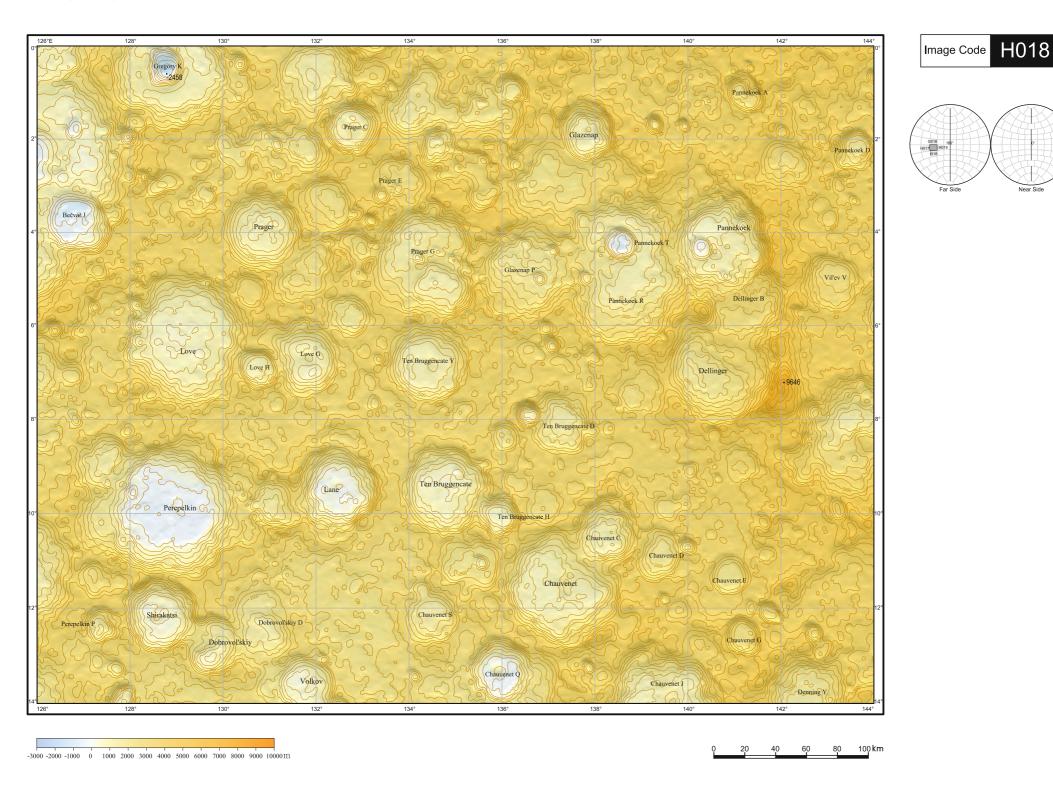
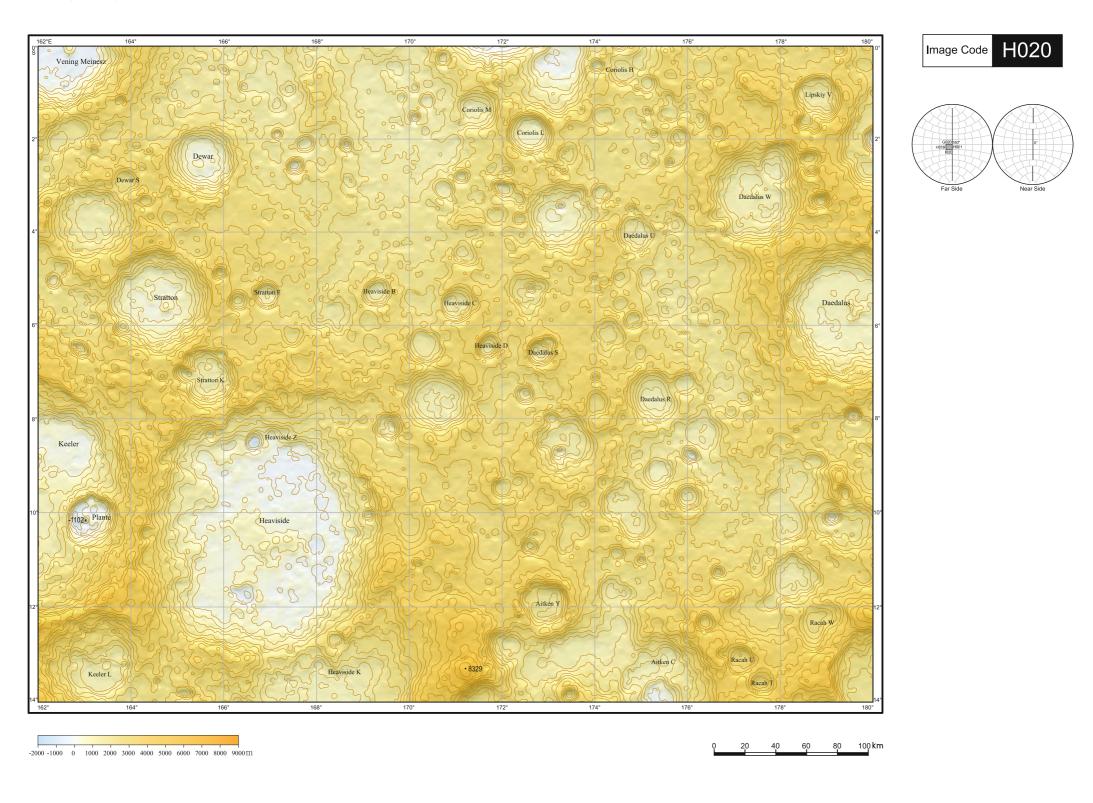


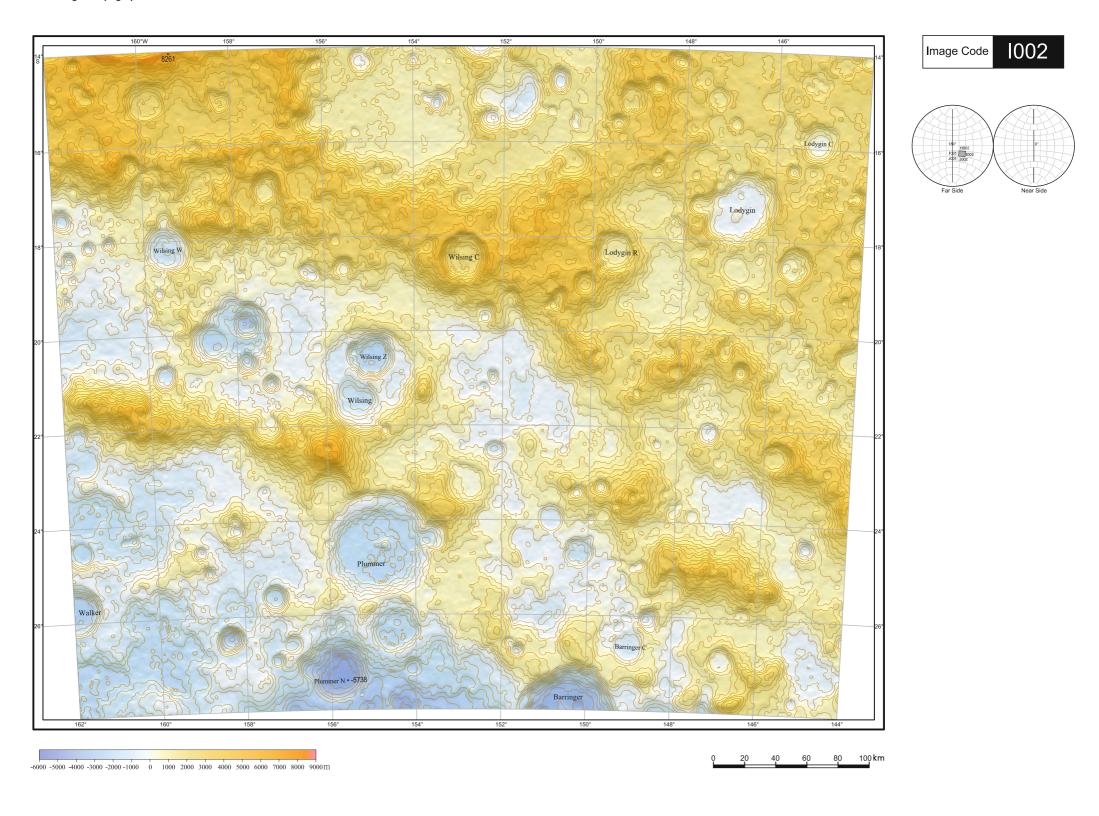
Image Code H019 148° 152° Chaplygin Y Ventris C Ventris D -766 Ventris A Vil'ev Ventris N Chaplygin K Keeler U Marconi Marconi H Keeler \$ Geiger Y Beijerinck D ·8178 146° 148° 150° 152° 154° 156° 158° 160° 162°

80 100 km

-1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 m



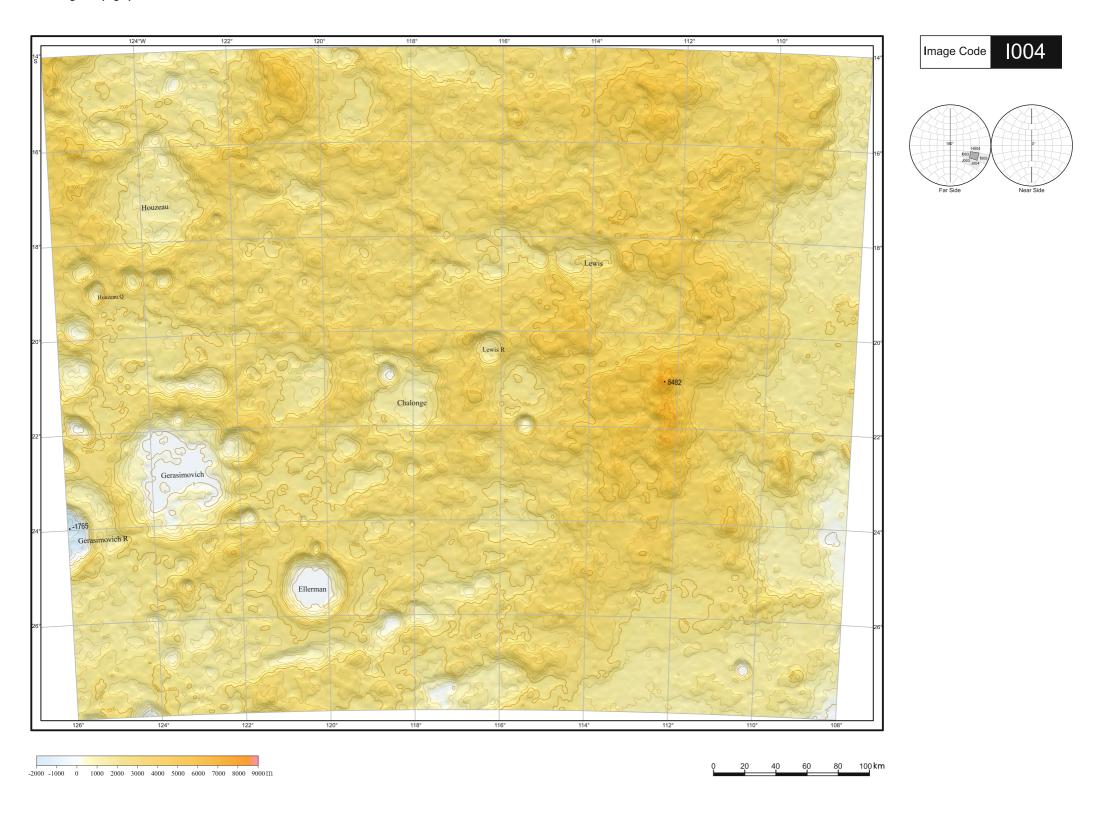
178°W 1001 McKellar T 7622 • McKellar Racah J De Vries Lacus Oblivionis Sniadecki Sniadecki Q Walker W Orlov Leeuwenhoek E 100 km -6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 7000 8000 m



1003 Image Code Paschen G Paschen S Paschen H Belopol'skiy Lodygin F Strömgren A Paschen K Mariotte Z Murakami Von der Pahlen Das baso

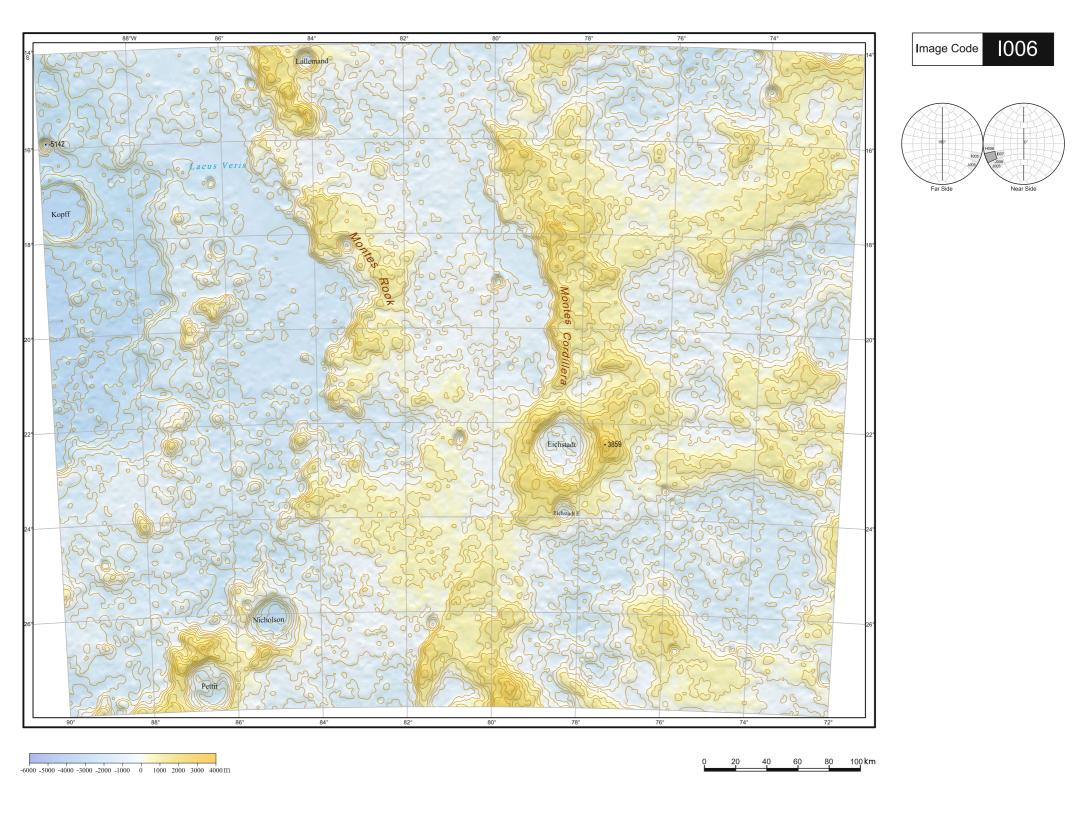
80 100 km

-4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 7000m

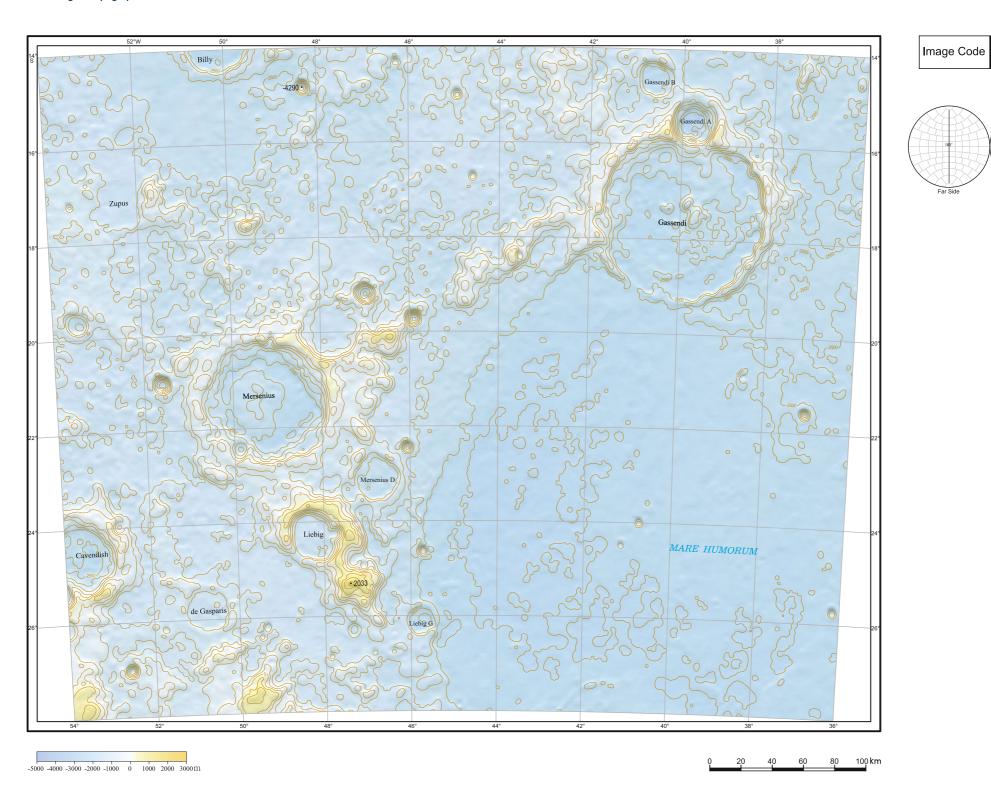


1005 Image Code 40 60 80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 m



1007 Image Code De Vico T Henry Frères Henry Henry Frères C 80 100 km -4000 -3000 -2000 -1000 0 1000 2000 3000 m

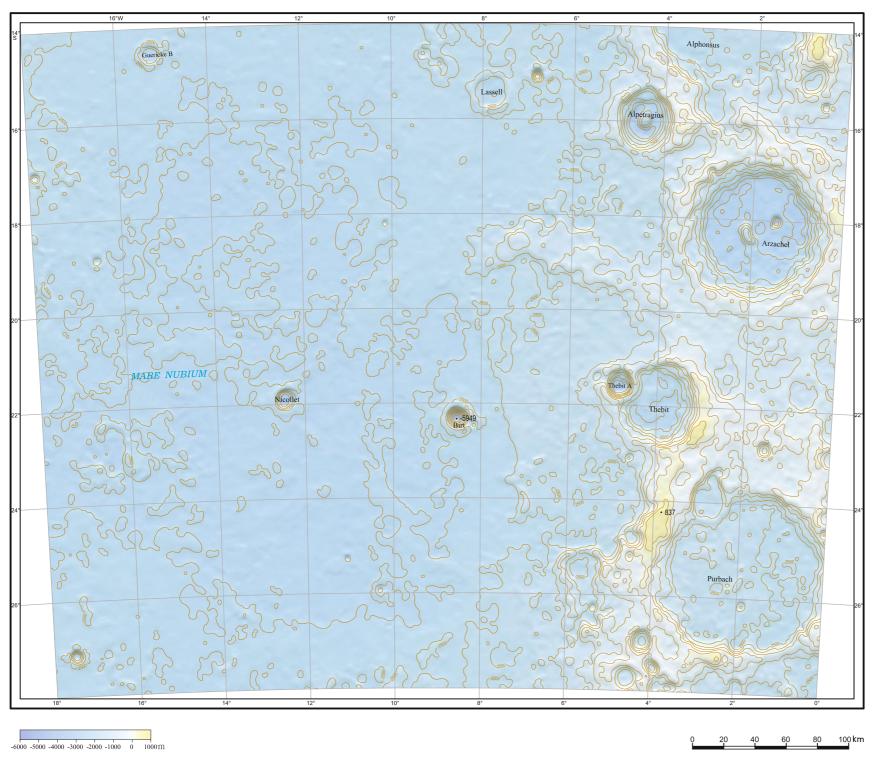


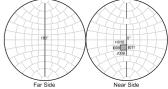
800I

1009 Image Code Bullialdus

80 100 km

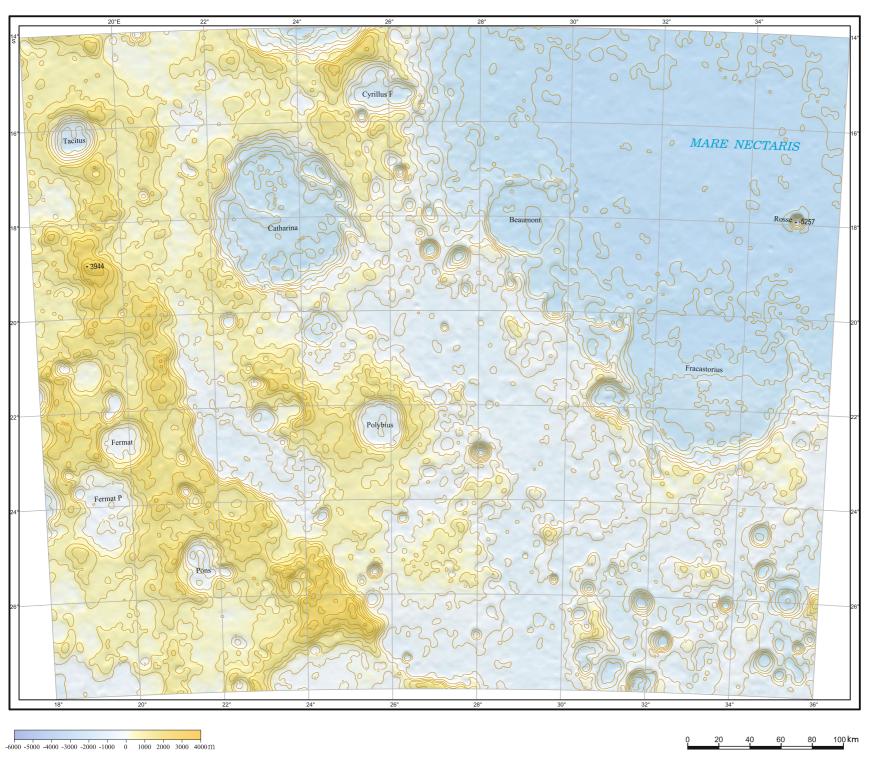
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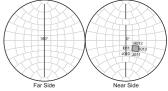


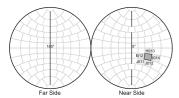


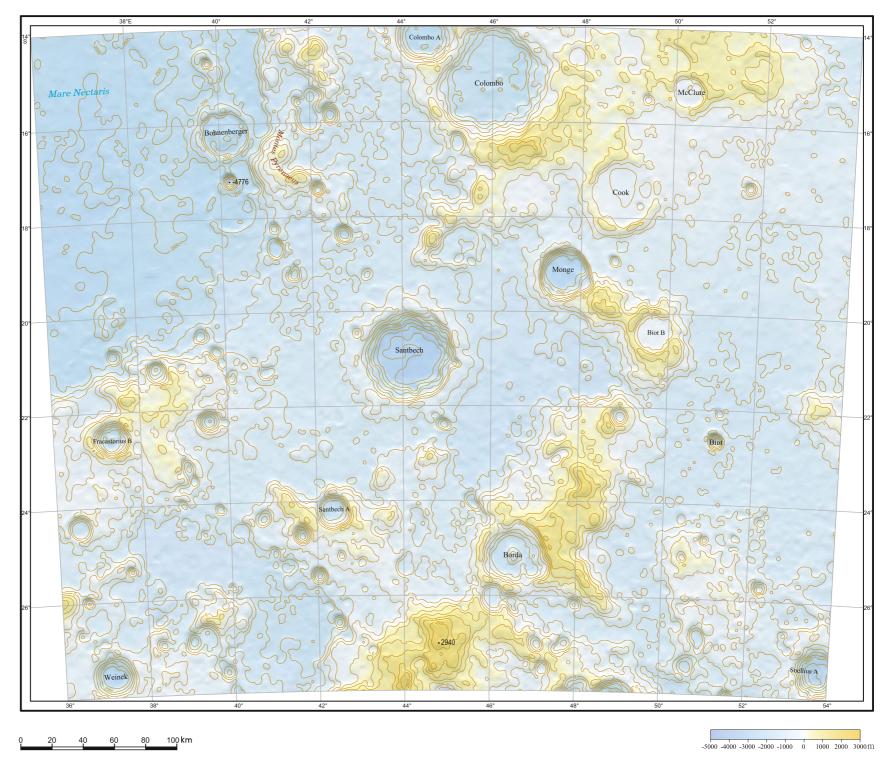
1011 Image Code Playfair

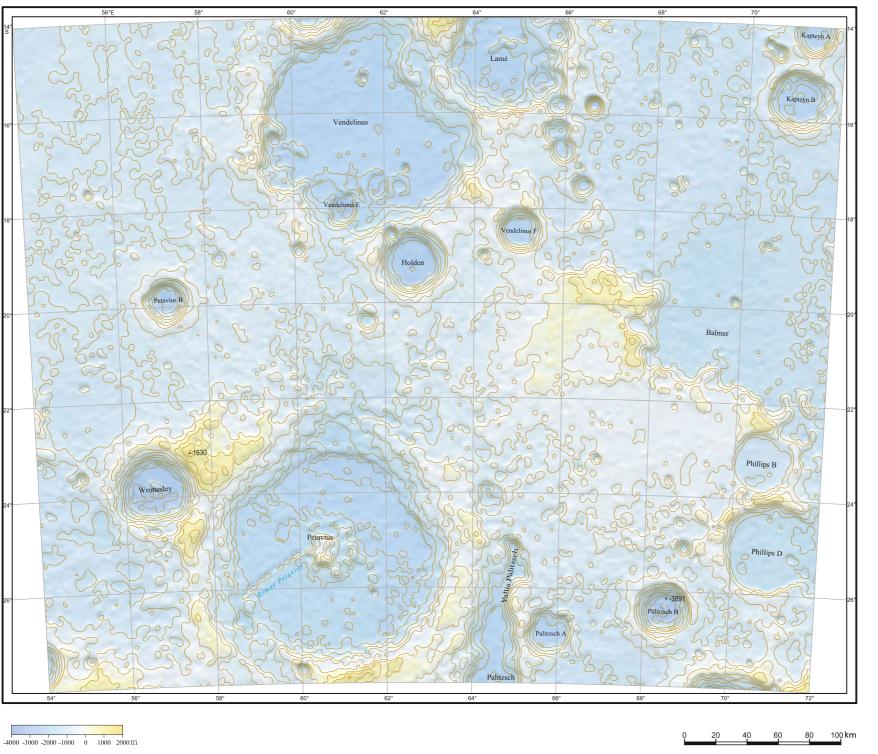


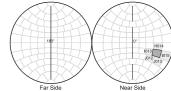


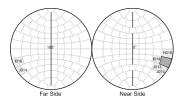


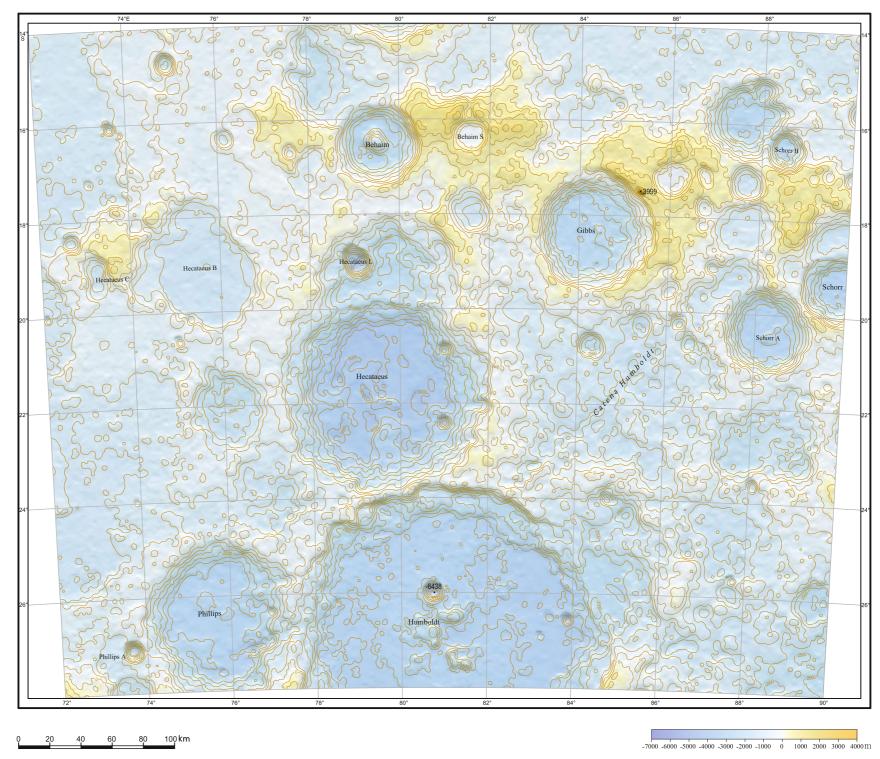


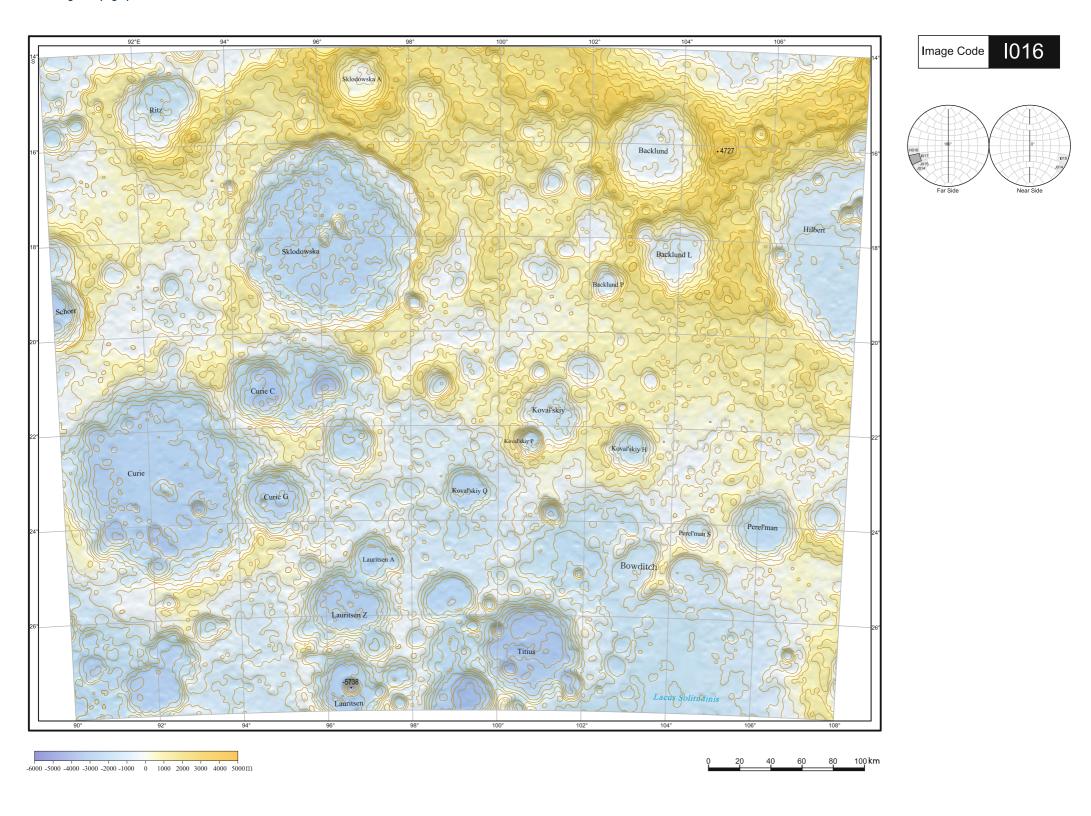








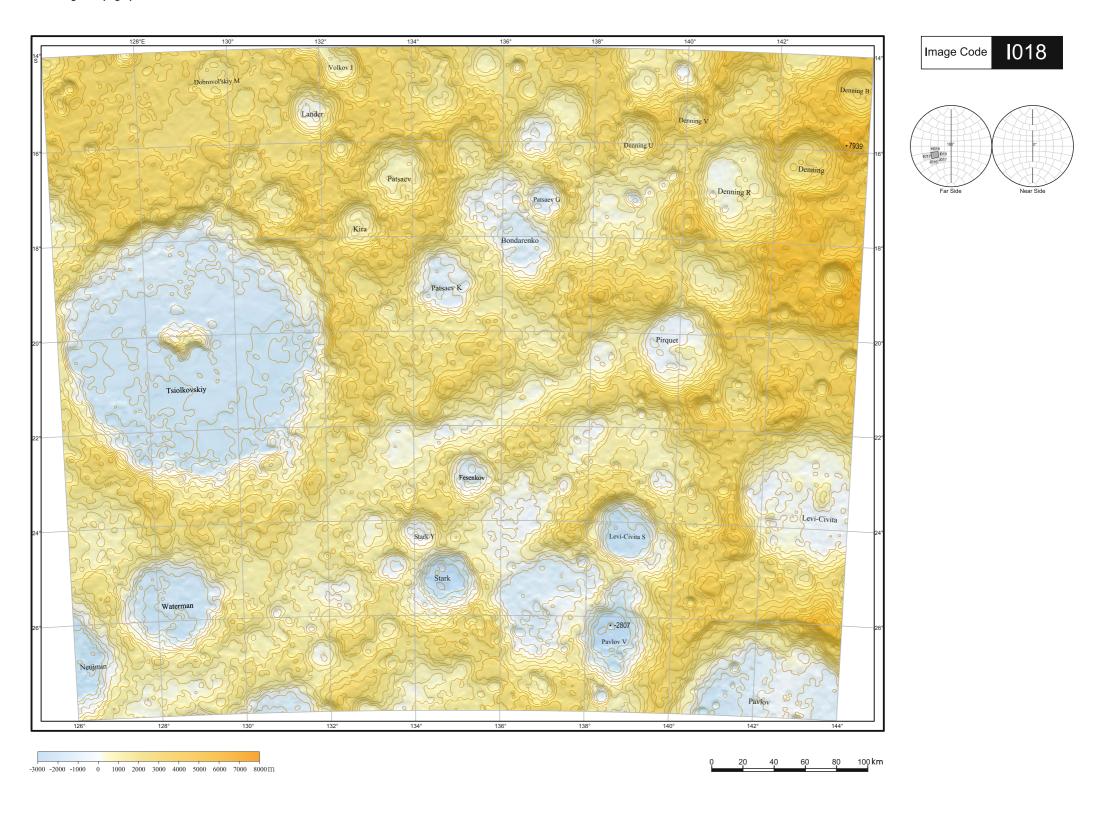




1017 Image Code Khvol'son Kondratyuk Delporte Hilbert E Litke Hilbert G Alden B Alden E Zhiritskiy Schaeberle U Zhiritskiy F Schaeberle

80 100 km

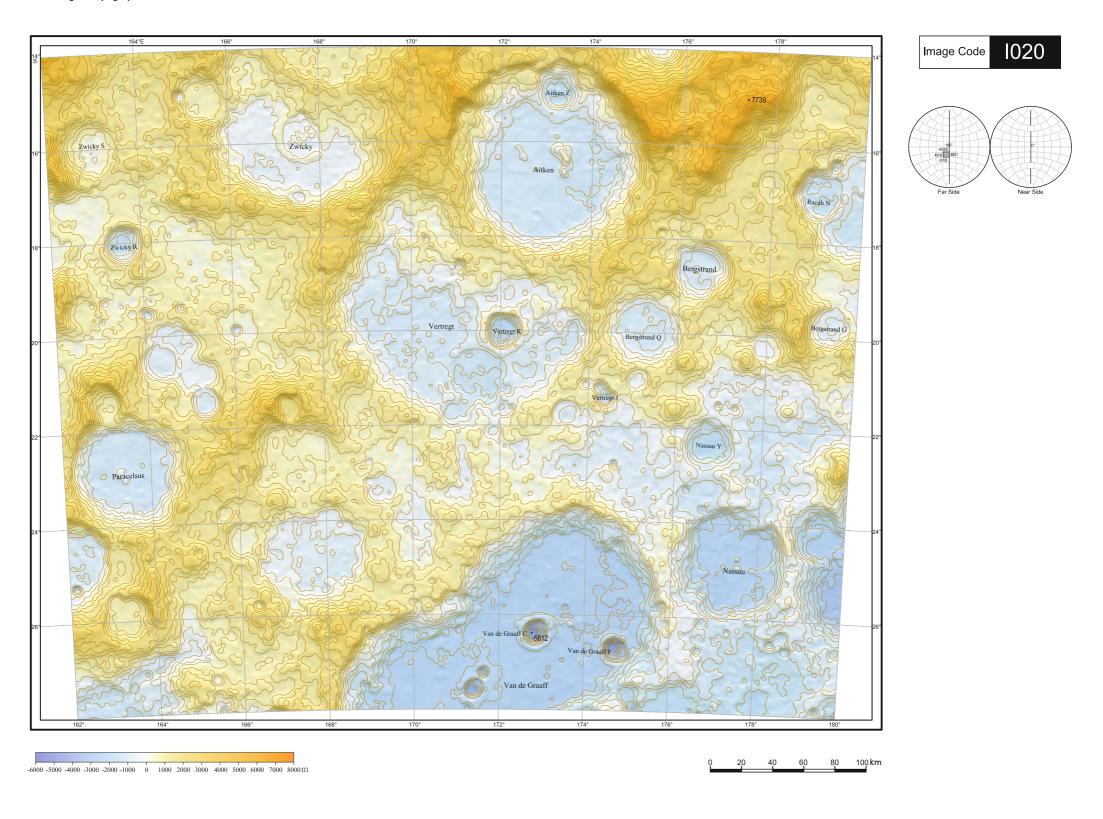
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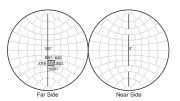


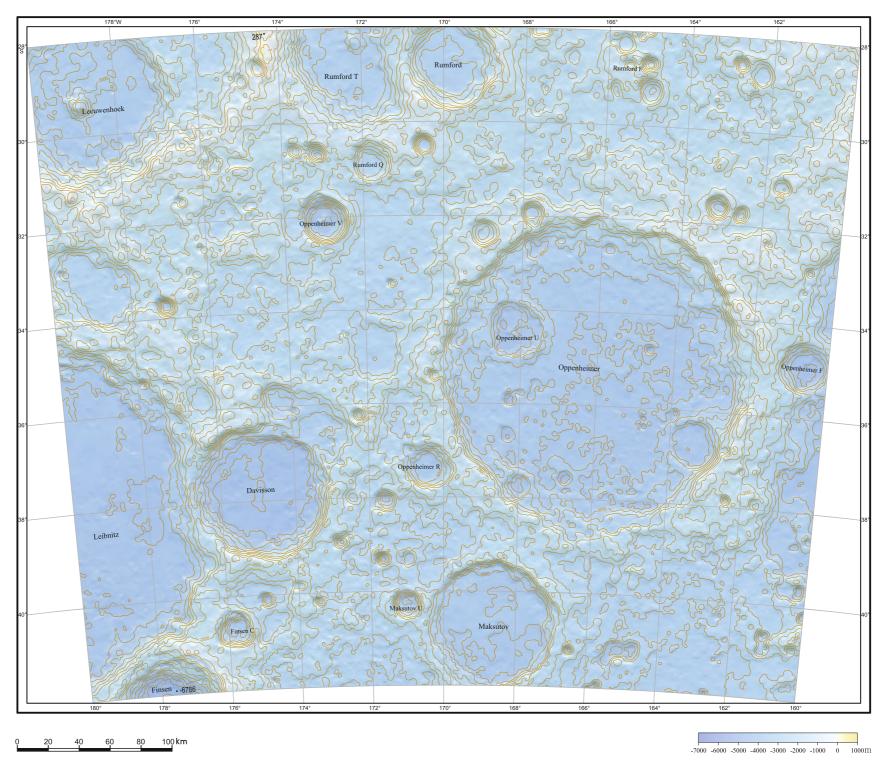
I019 Image Code Geiger Beijerinck R Beijerinck J Geiger R Gagarin Z Armiński -Grave Isaev Cyrano A 8900 • Barbier U Wroblewski Holetschek Z Holetschek 154°

100 km

-3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000m







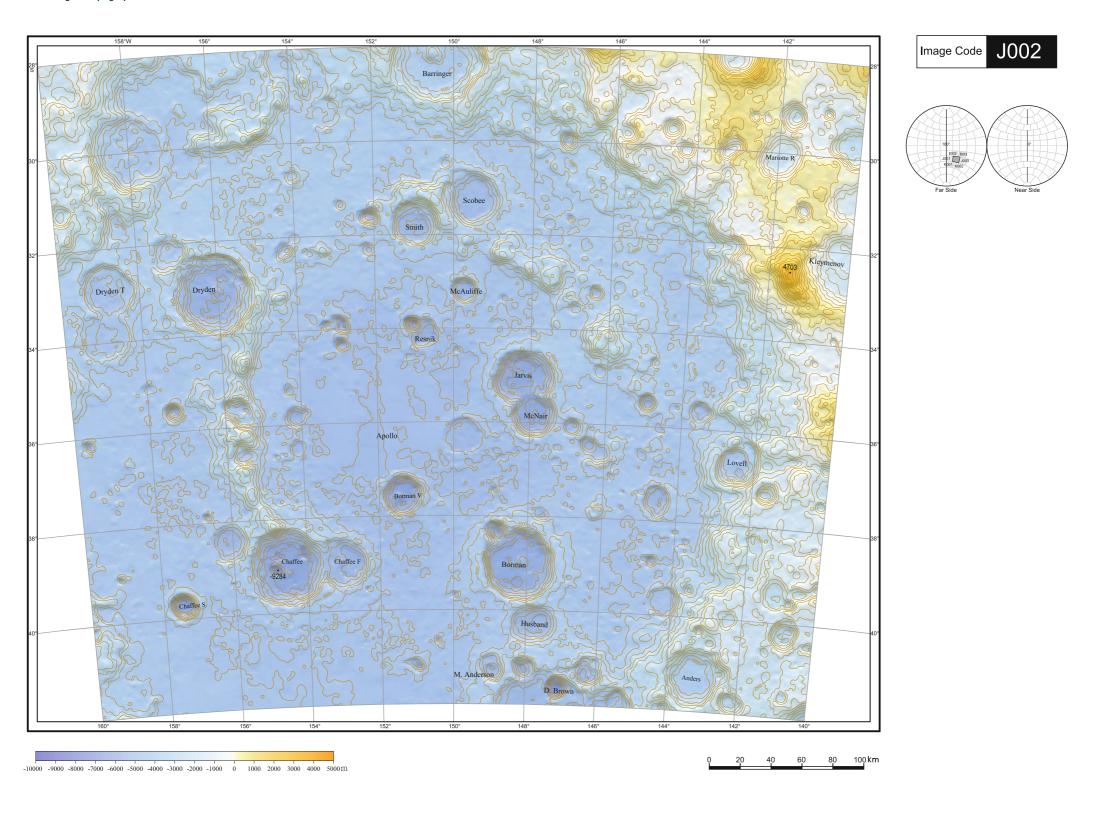
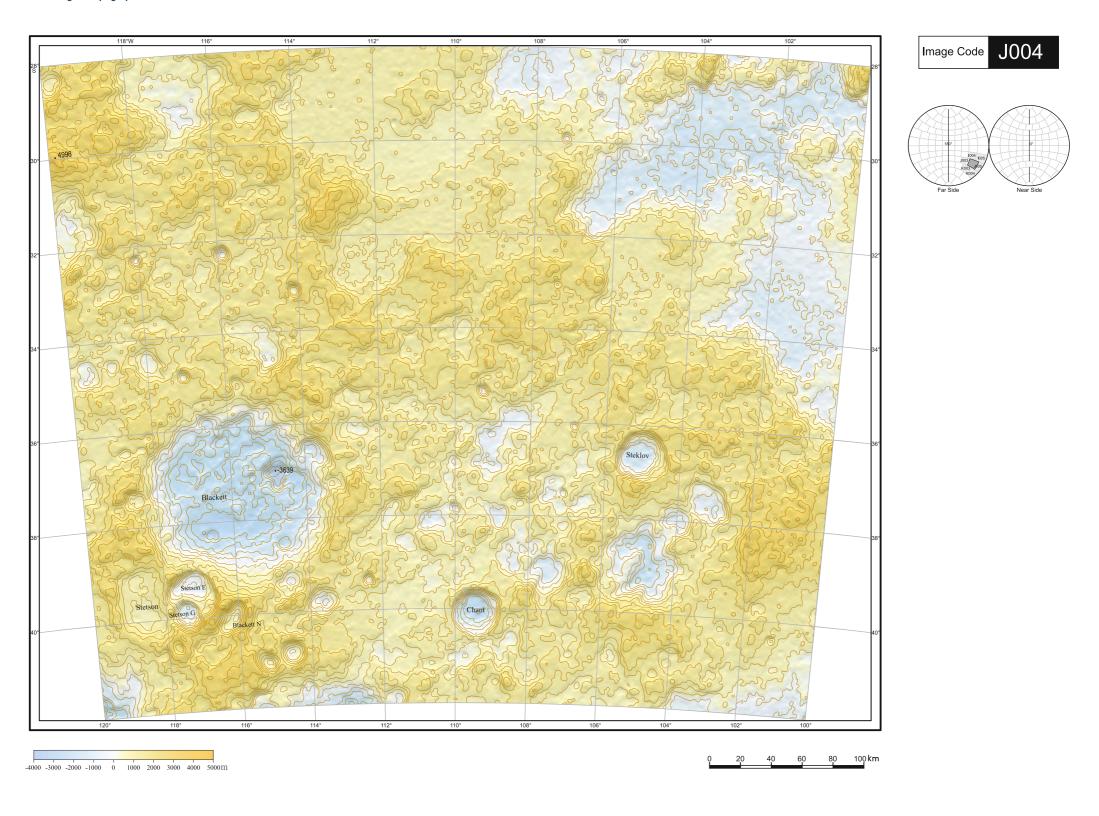
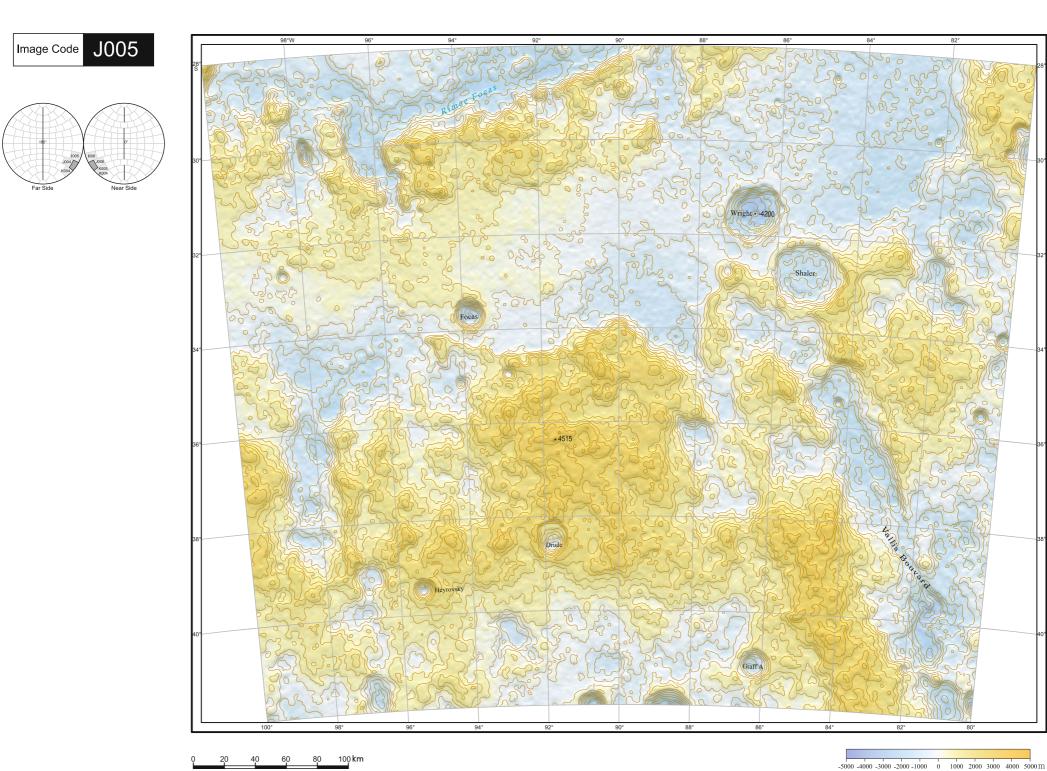


Image Code J003 Chebyshev C Kleymenov

80 100 km

-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000 m





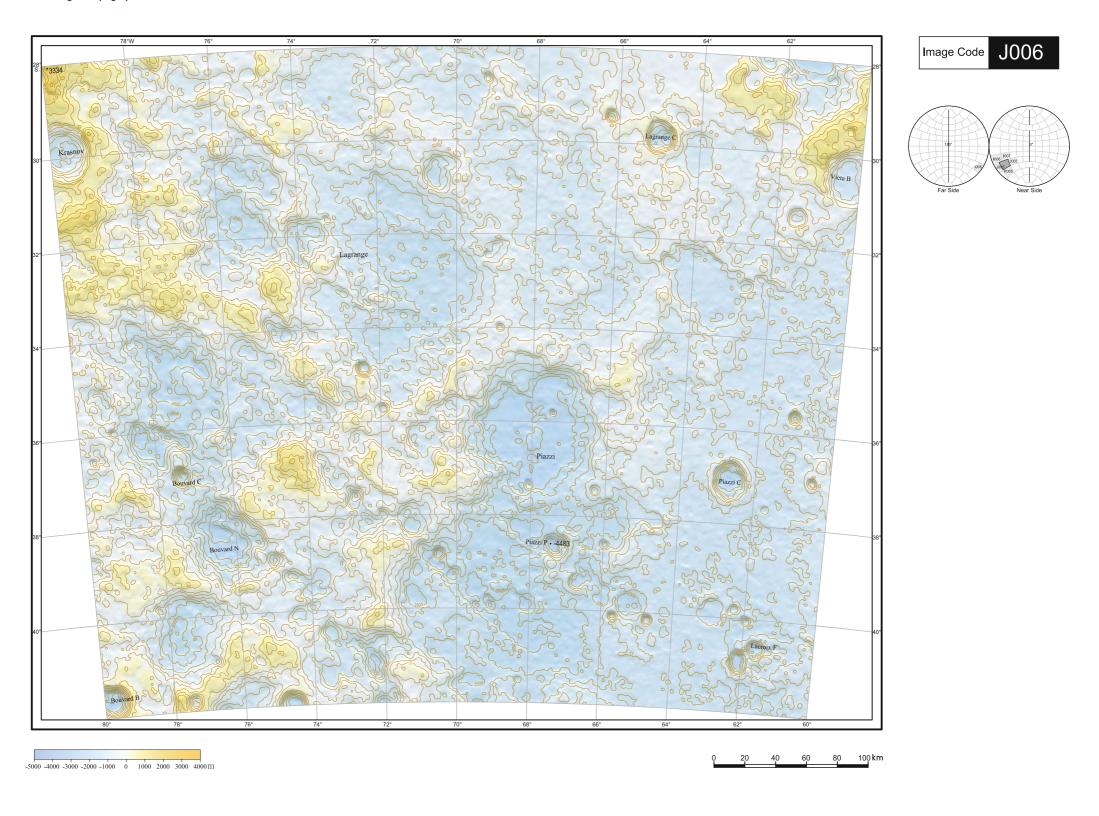


Image Code J007 -3831 Vieta Lacroix

-4000 -3000 -2000 -1000 0 1000 2000 m

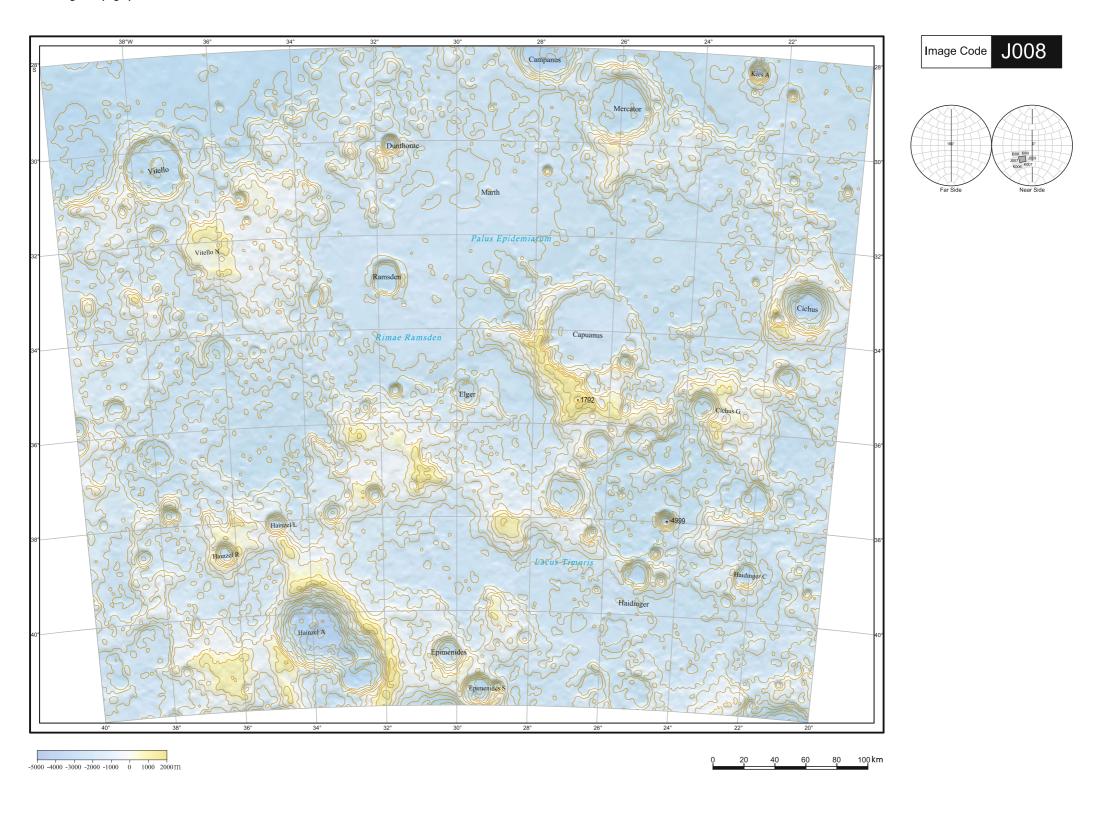
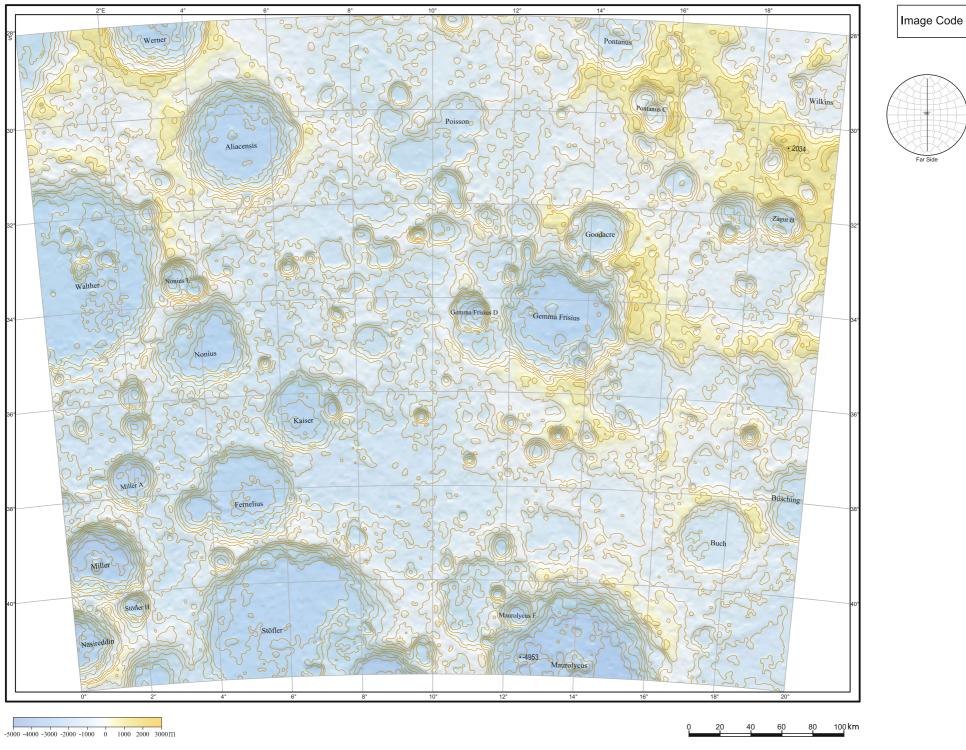
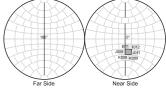


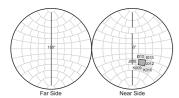
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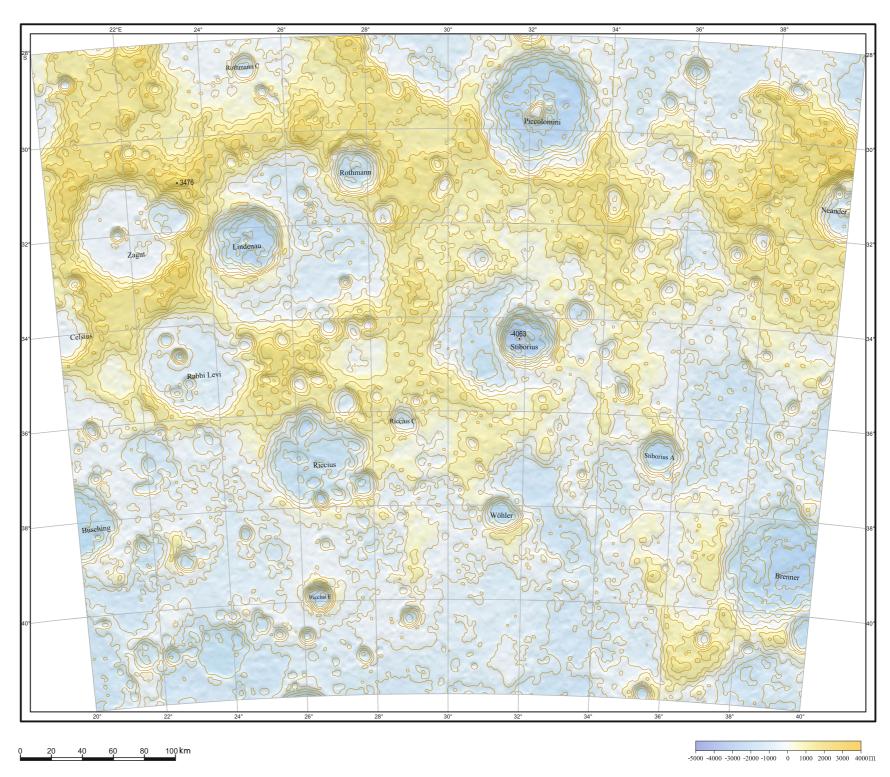
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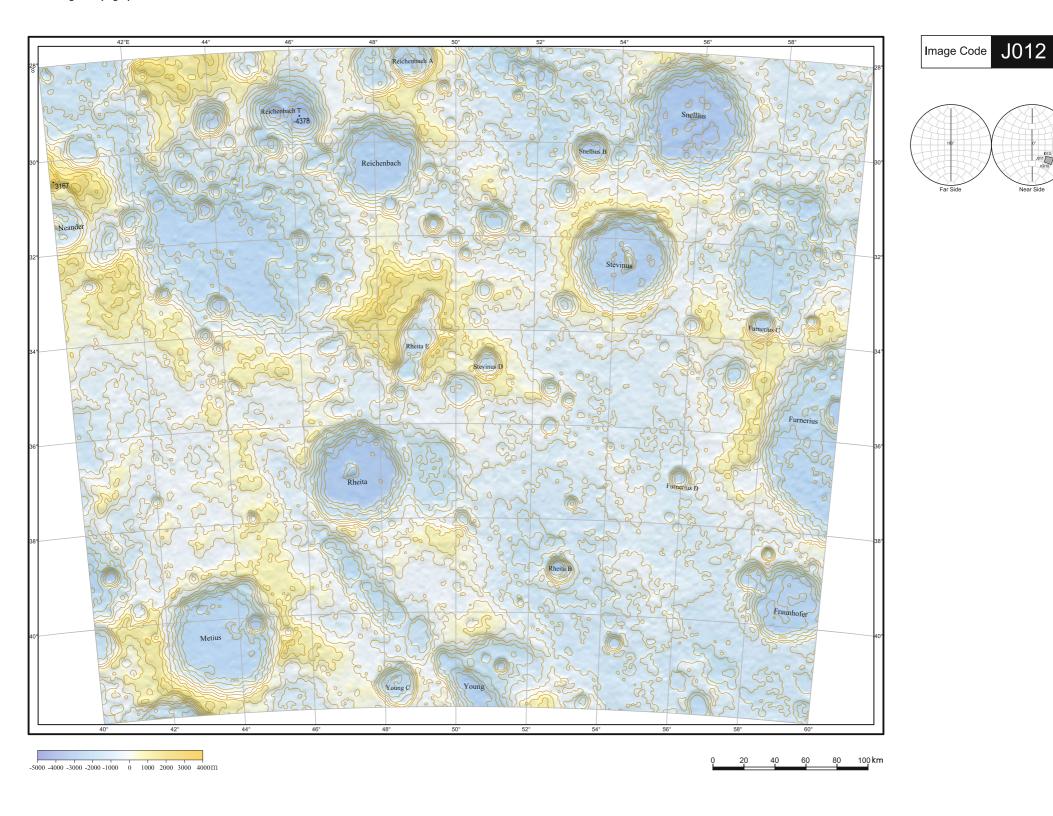
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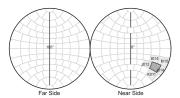


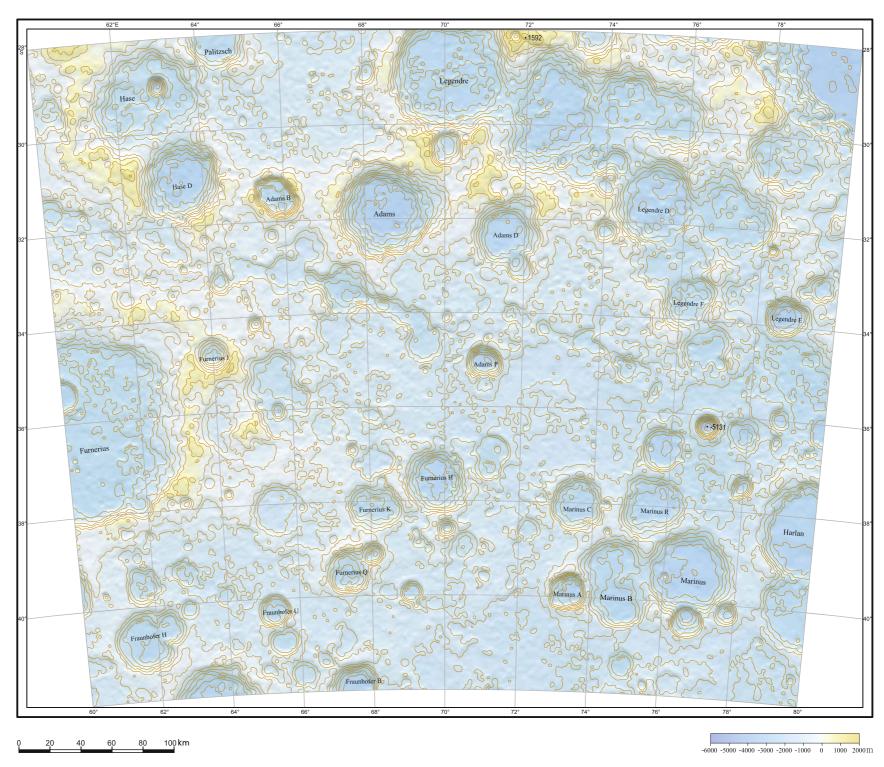


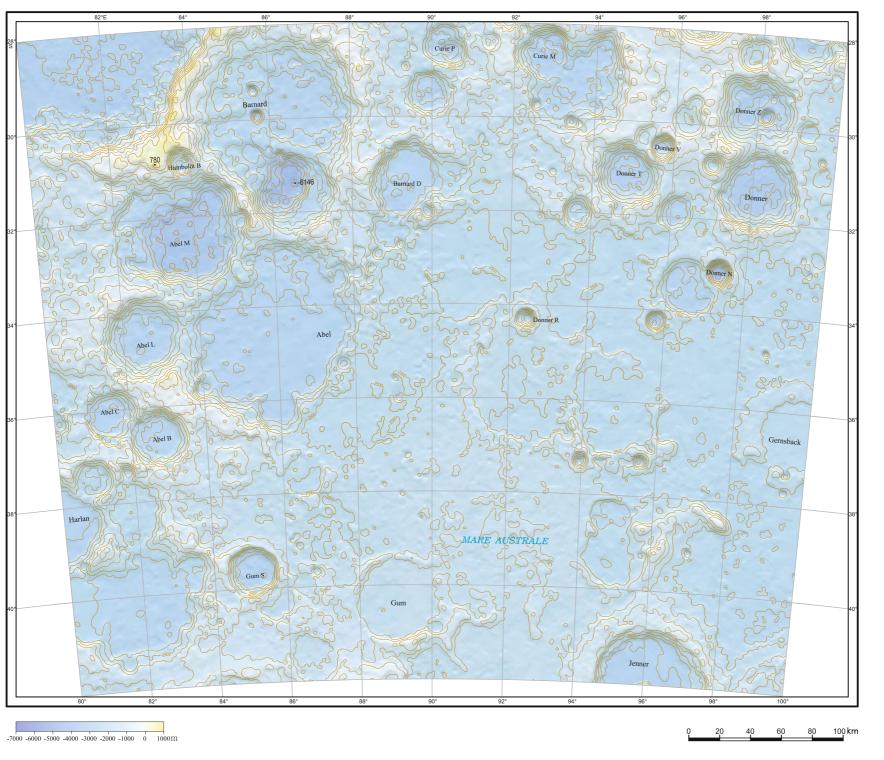


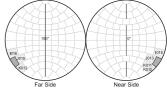


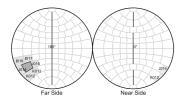


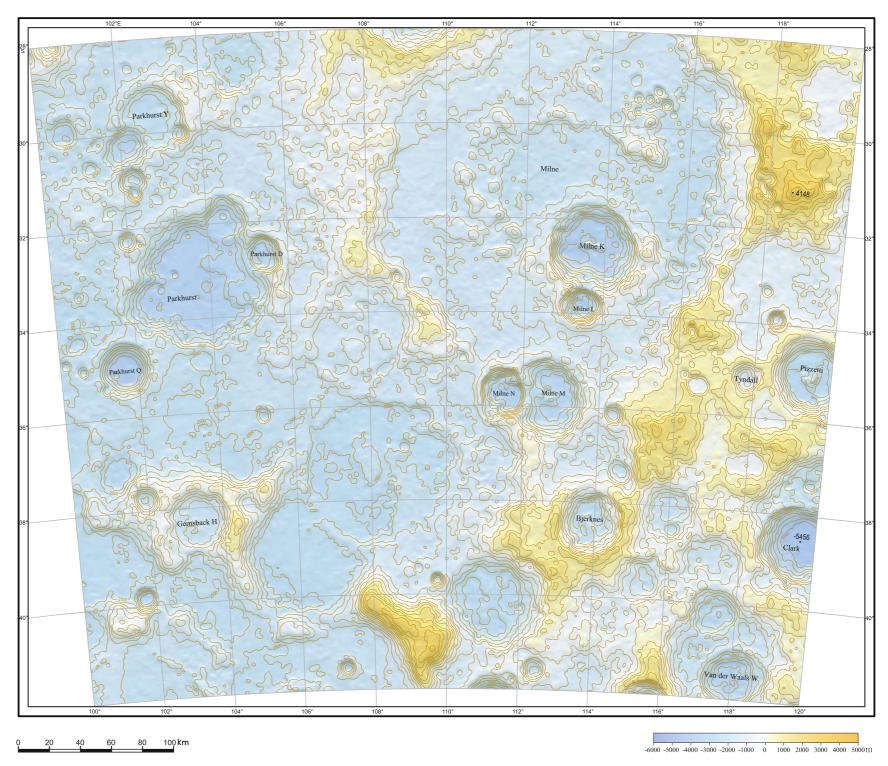


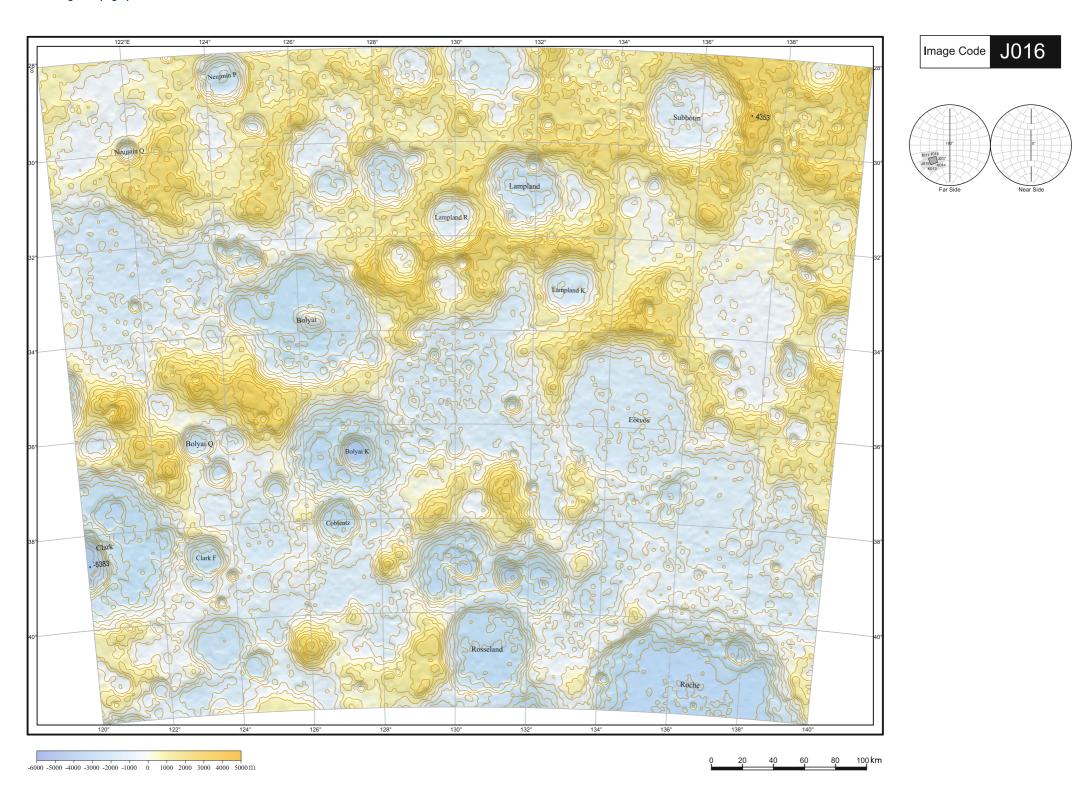


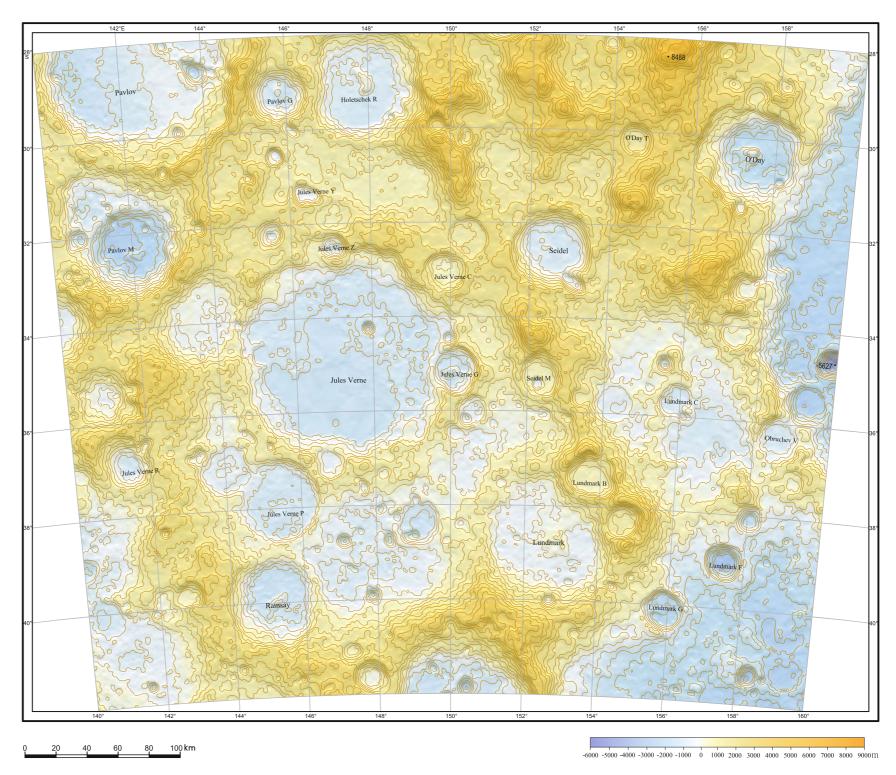


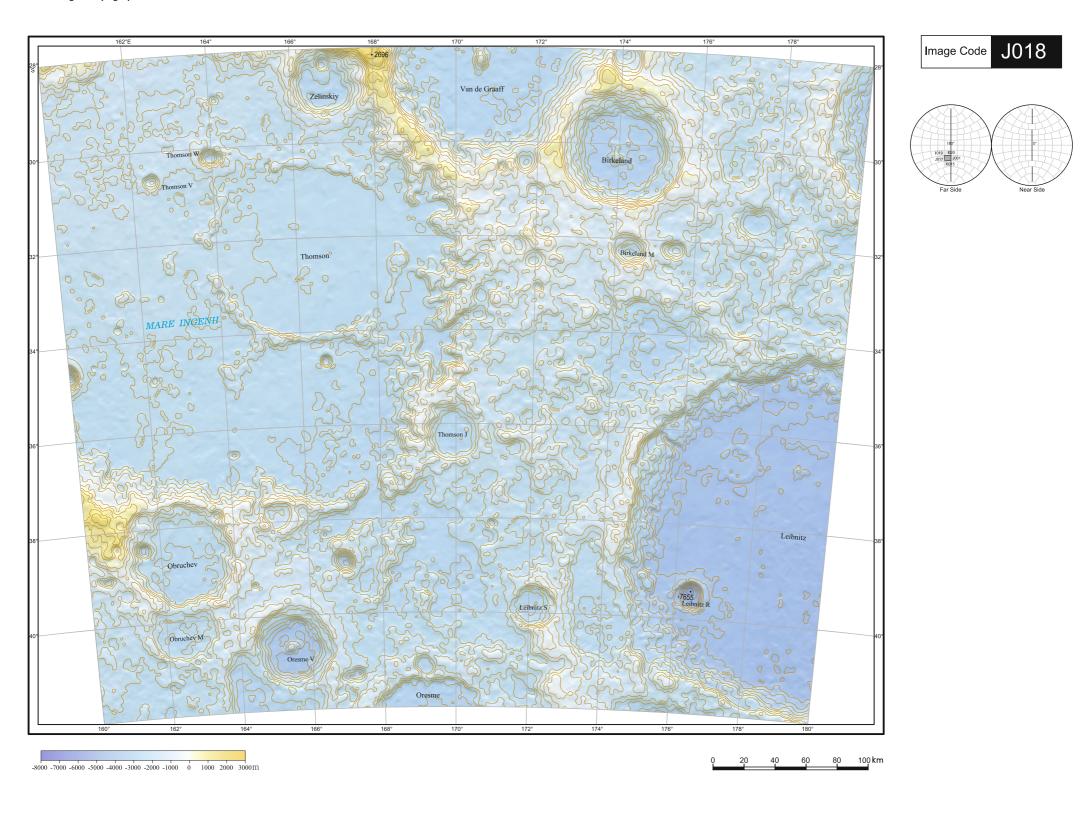


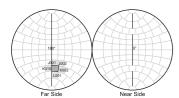


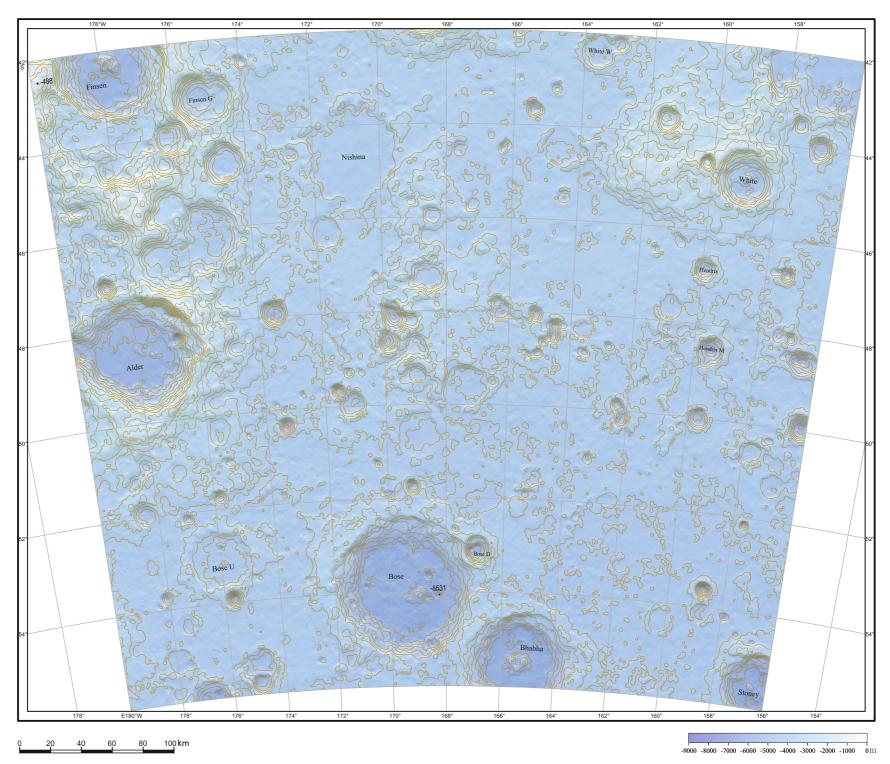


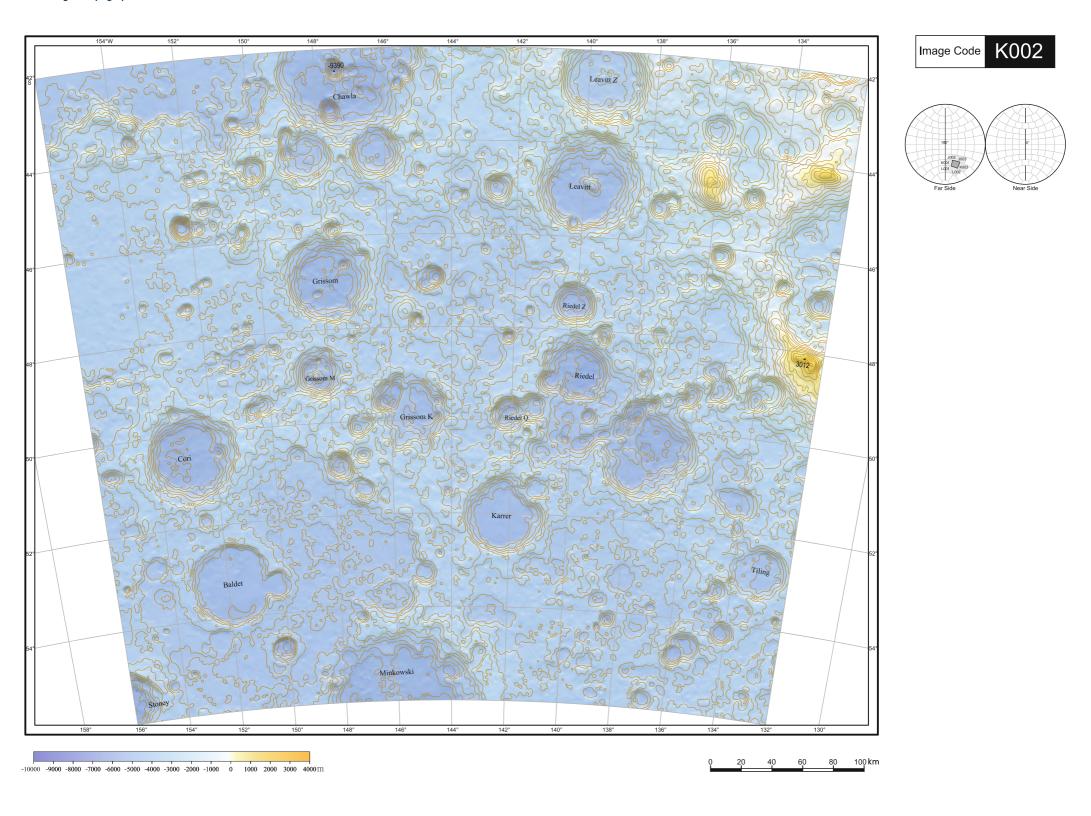


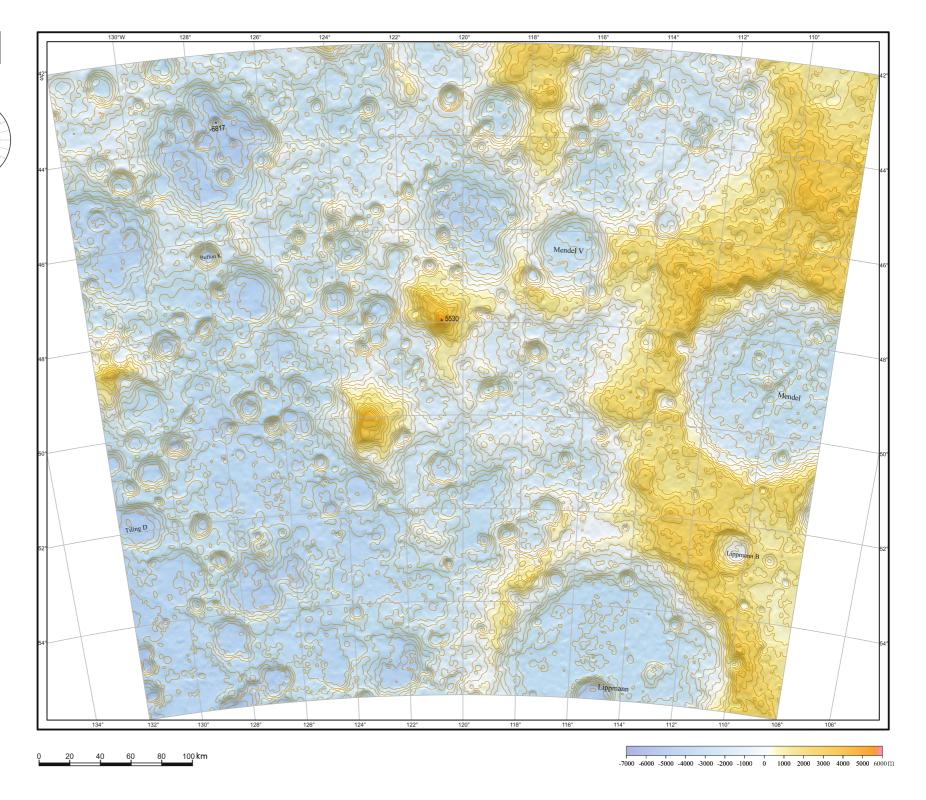


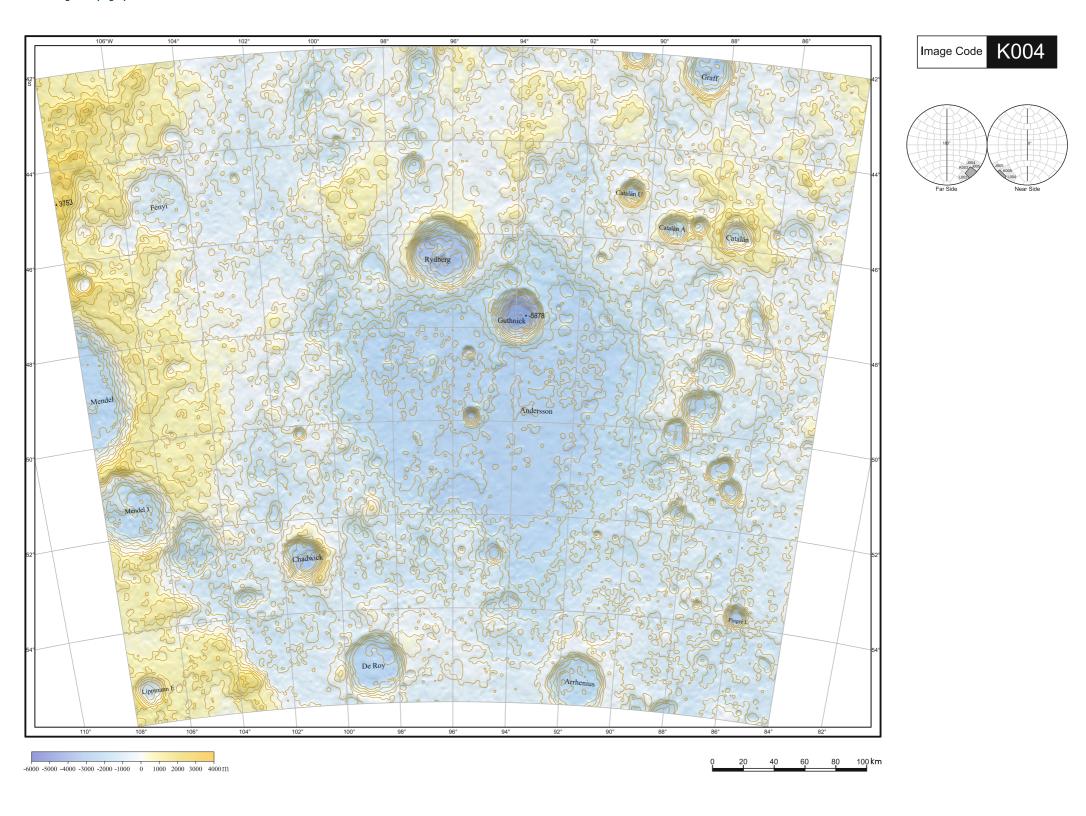


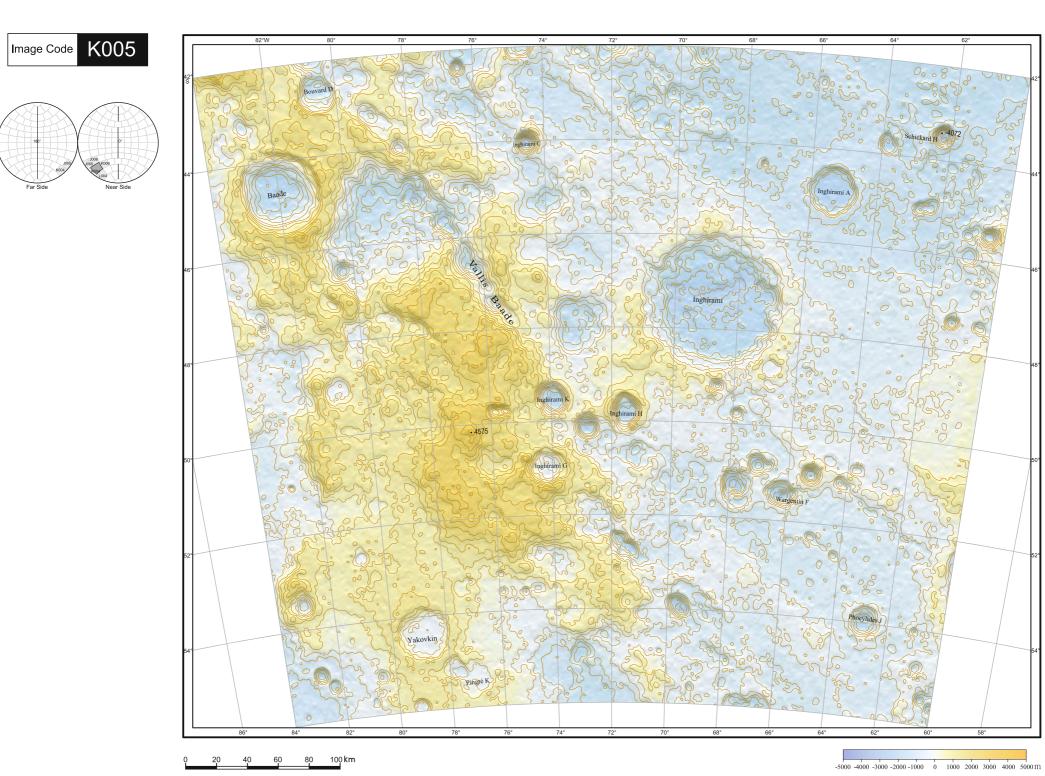












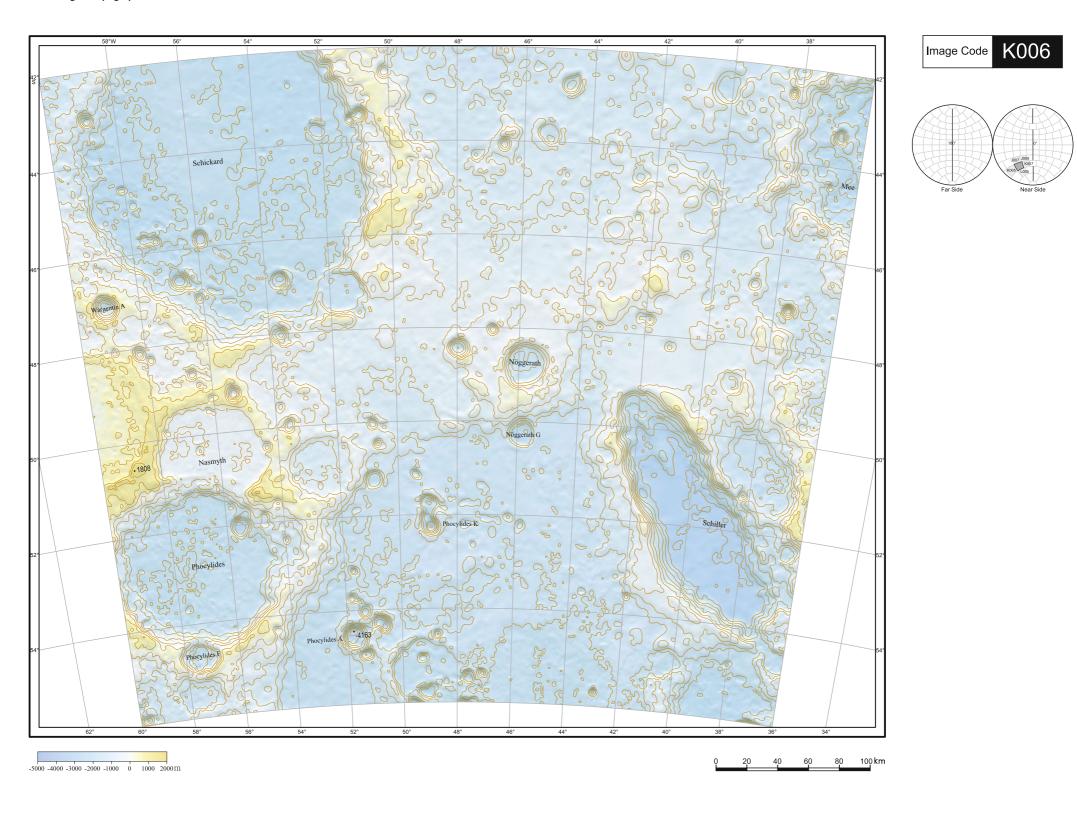
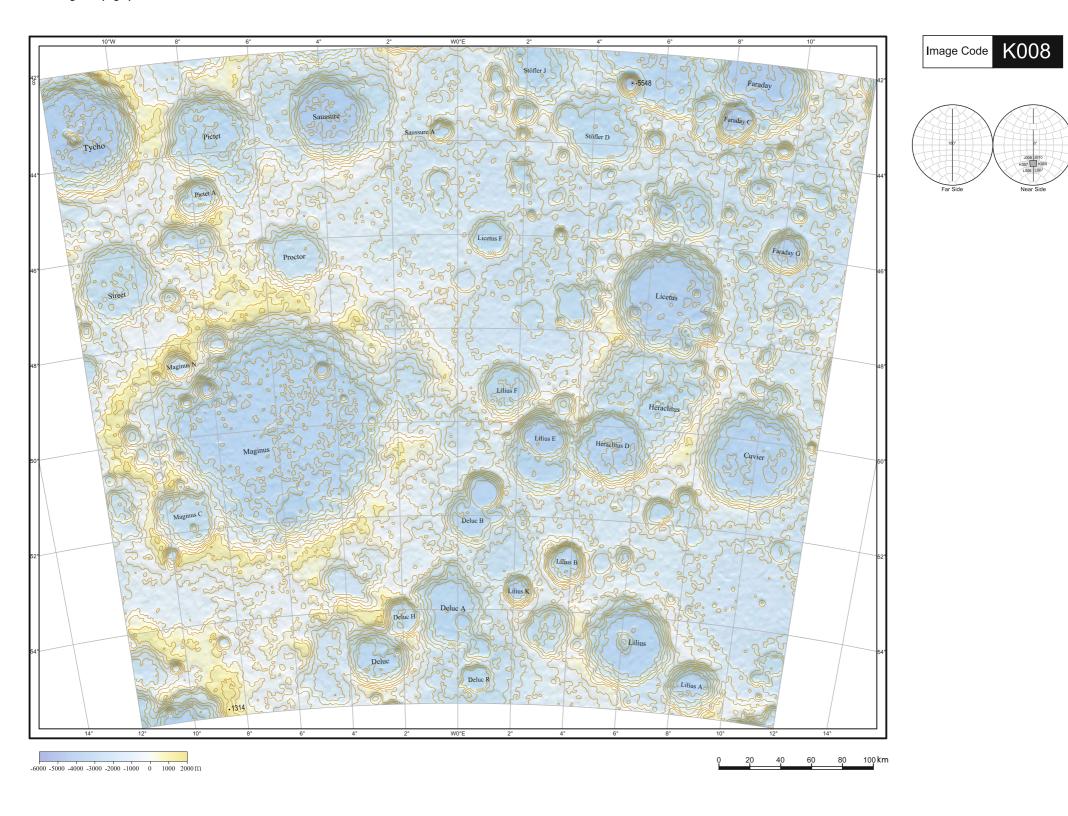
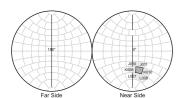


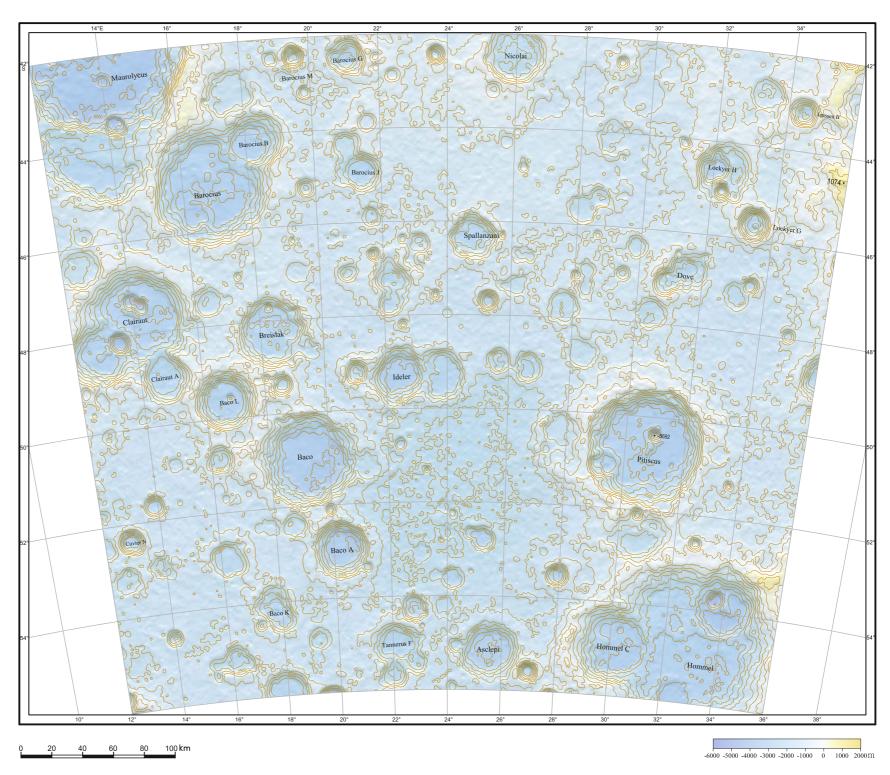
Image Code K007 Lagalla JO O Tyoho D

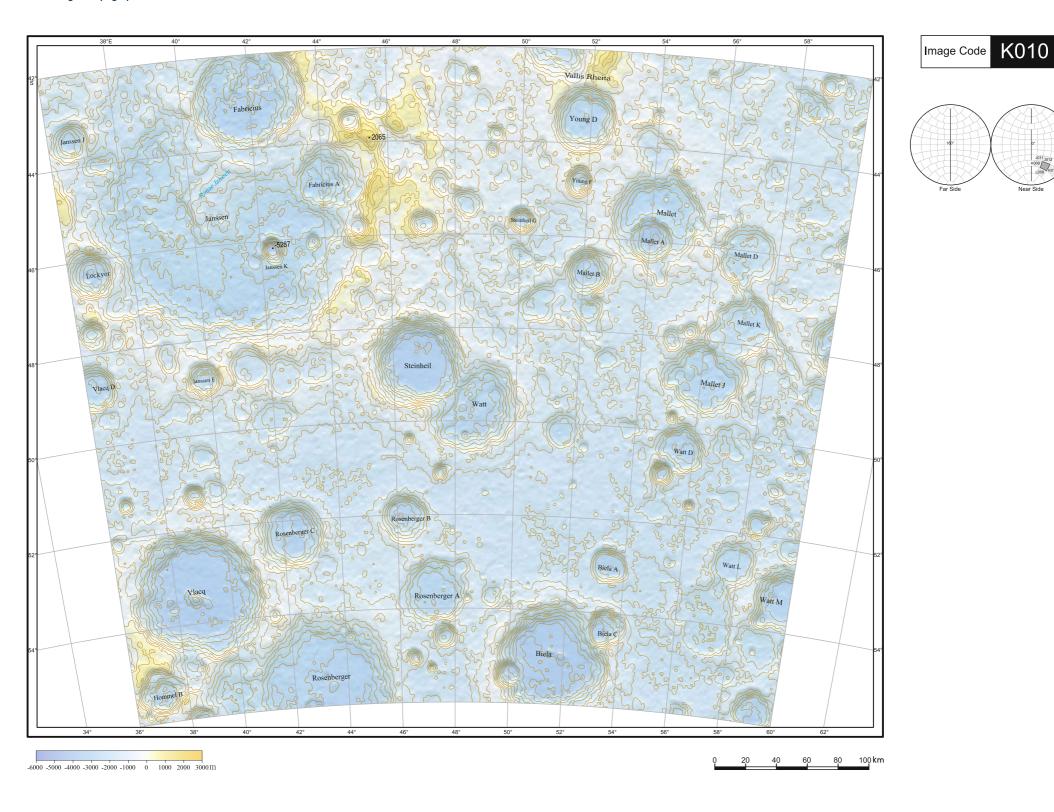
80 100 km

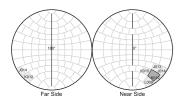
-6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 m

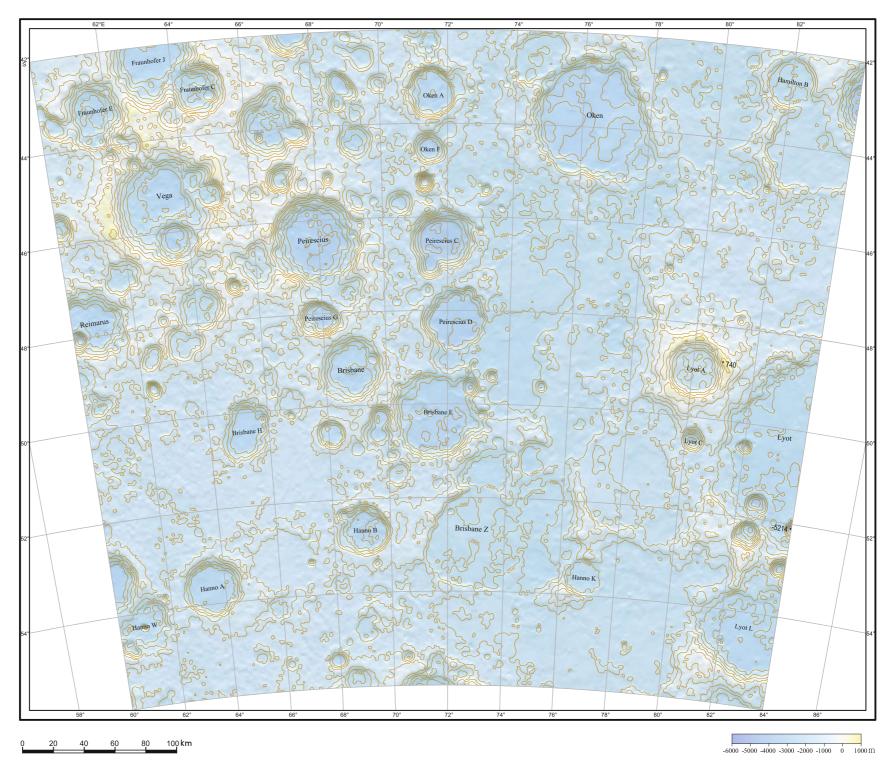


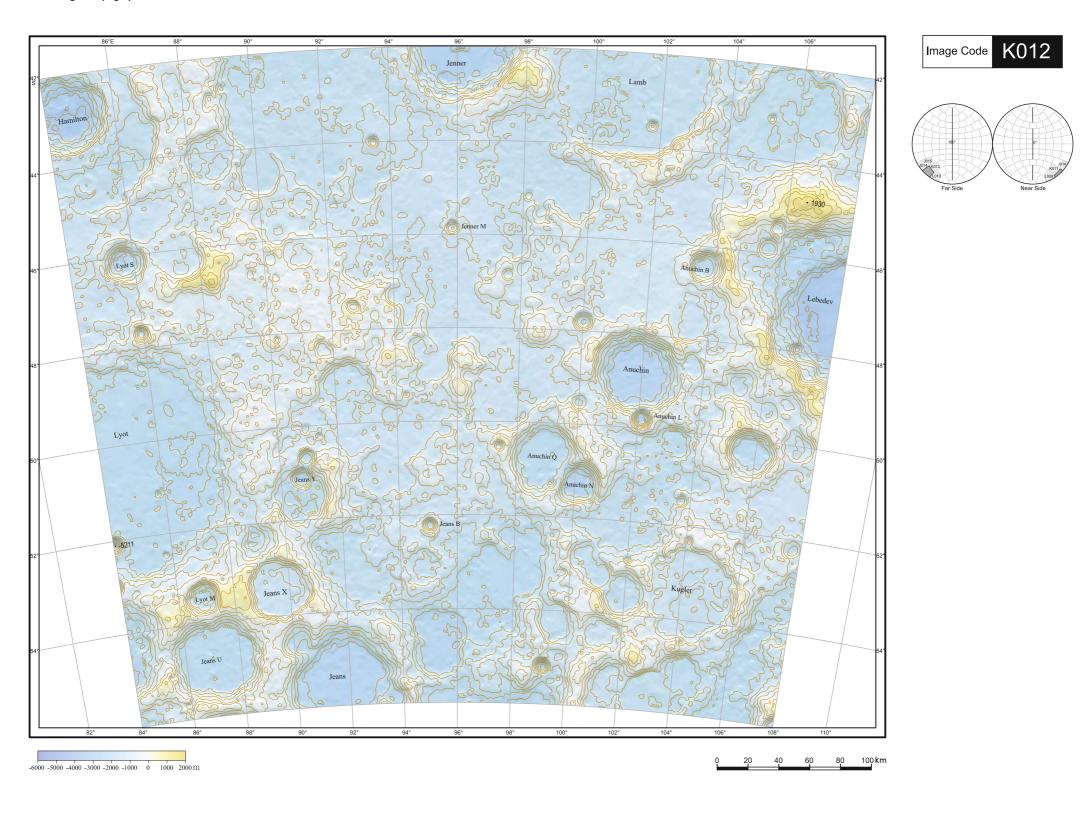


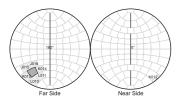


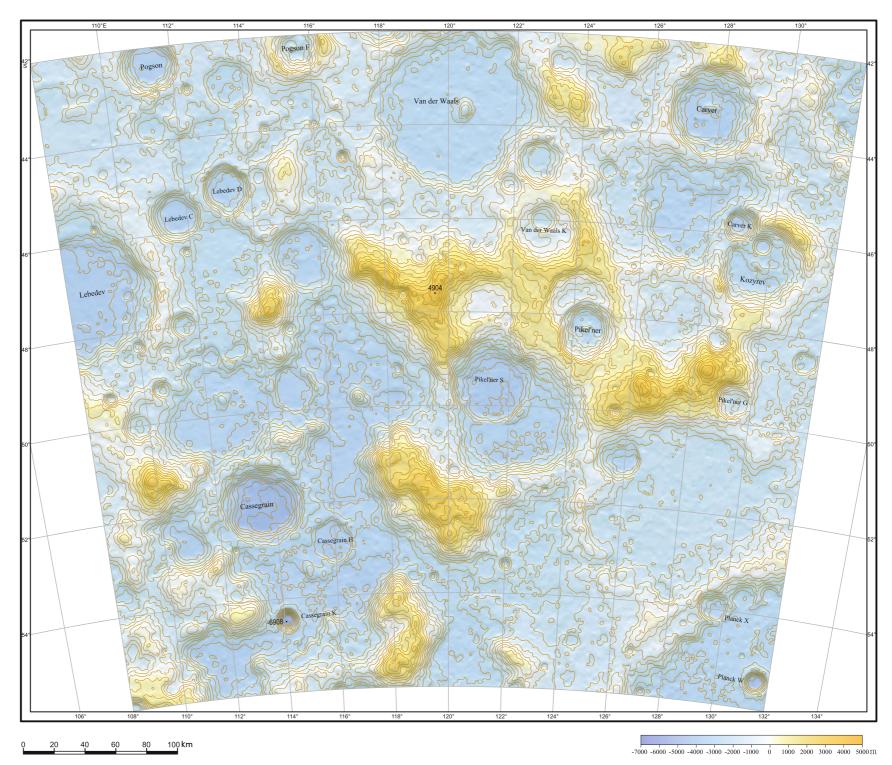


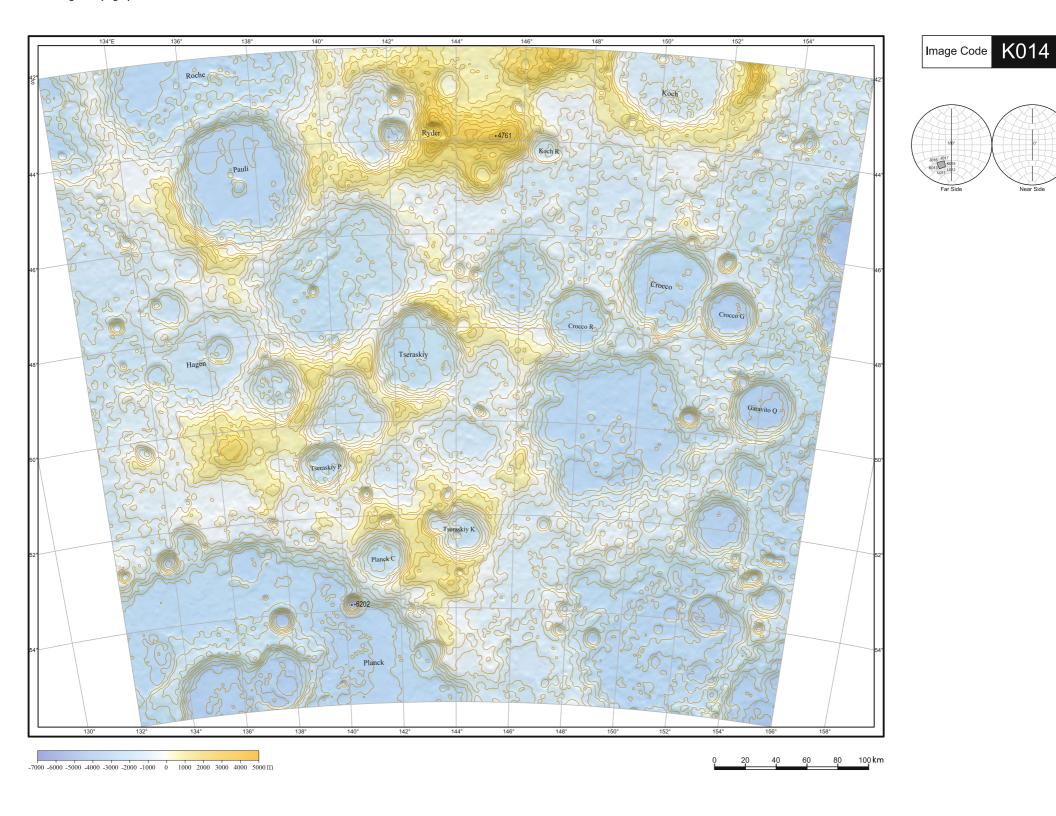


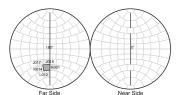


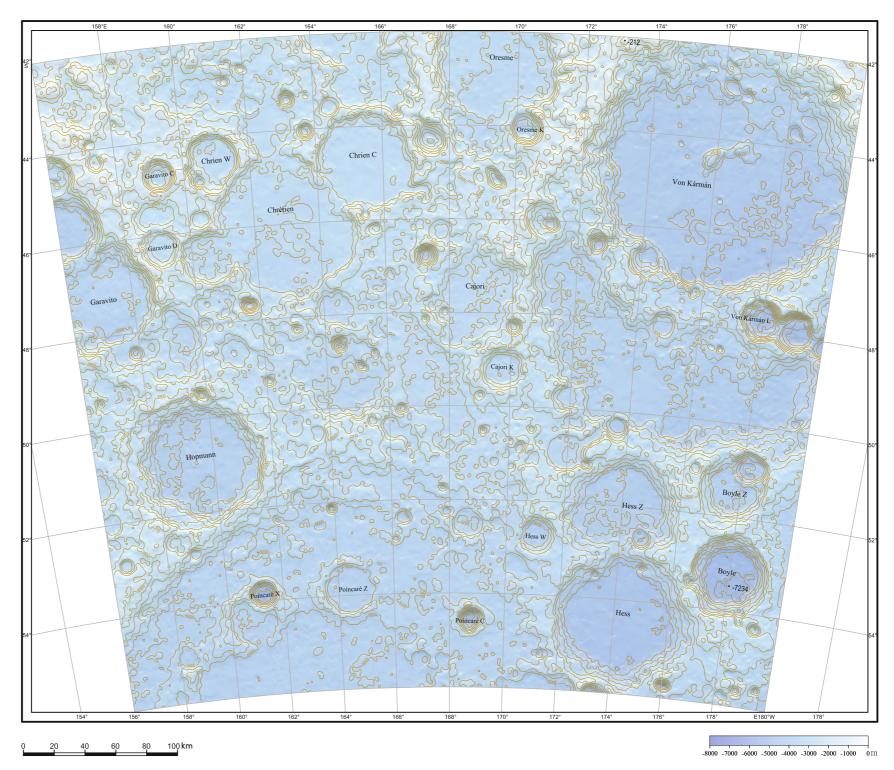


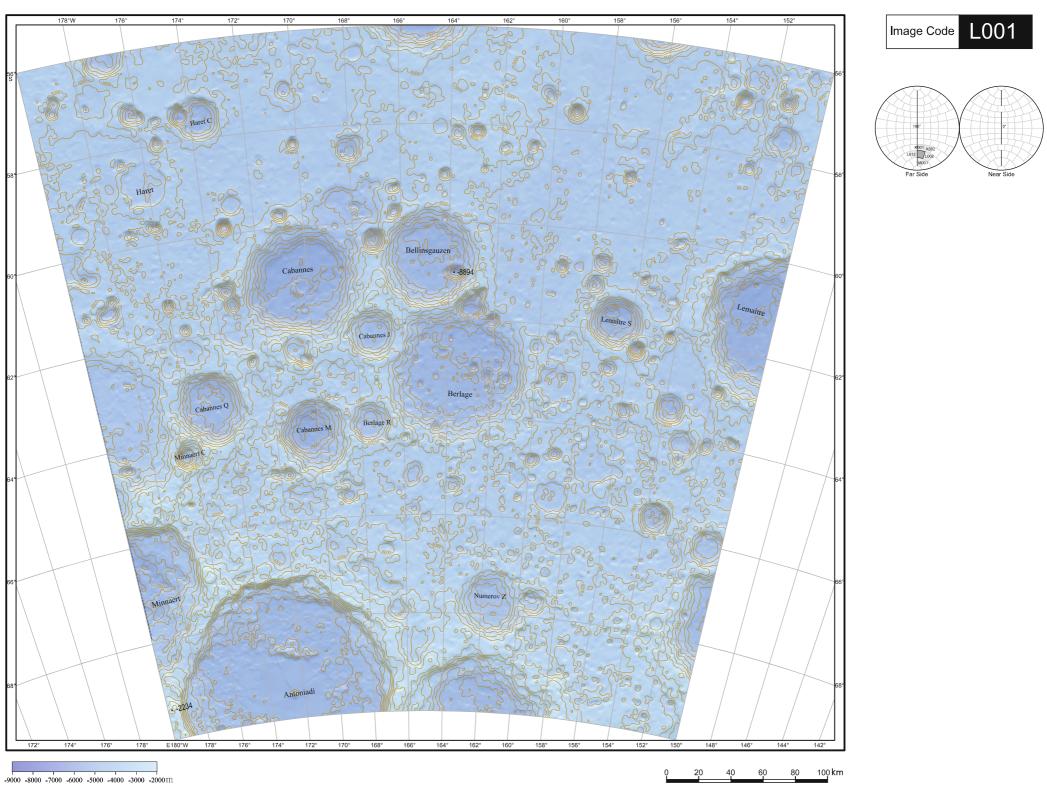




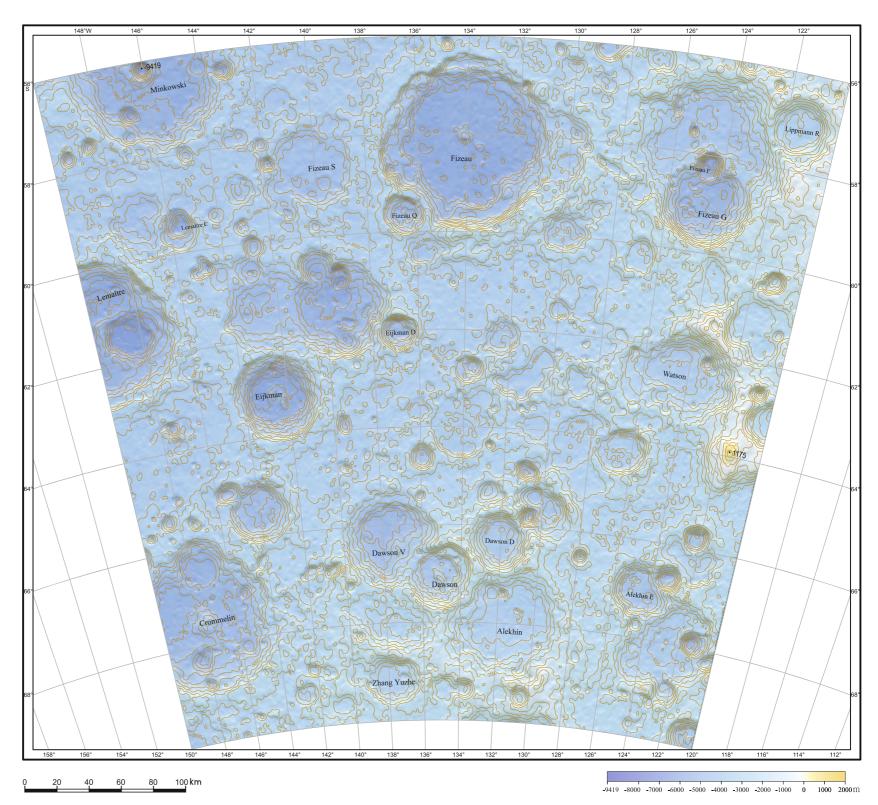


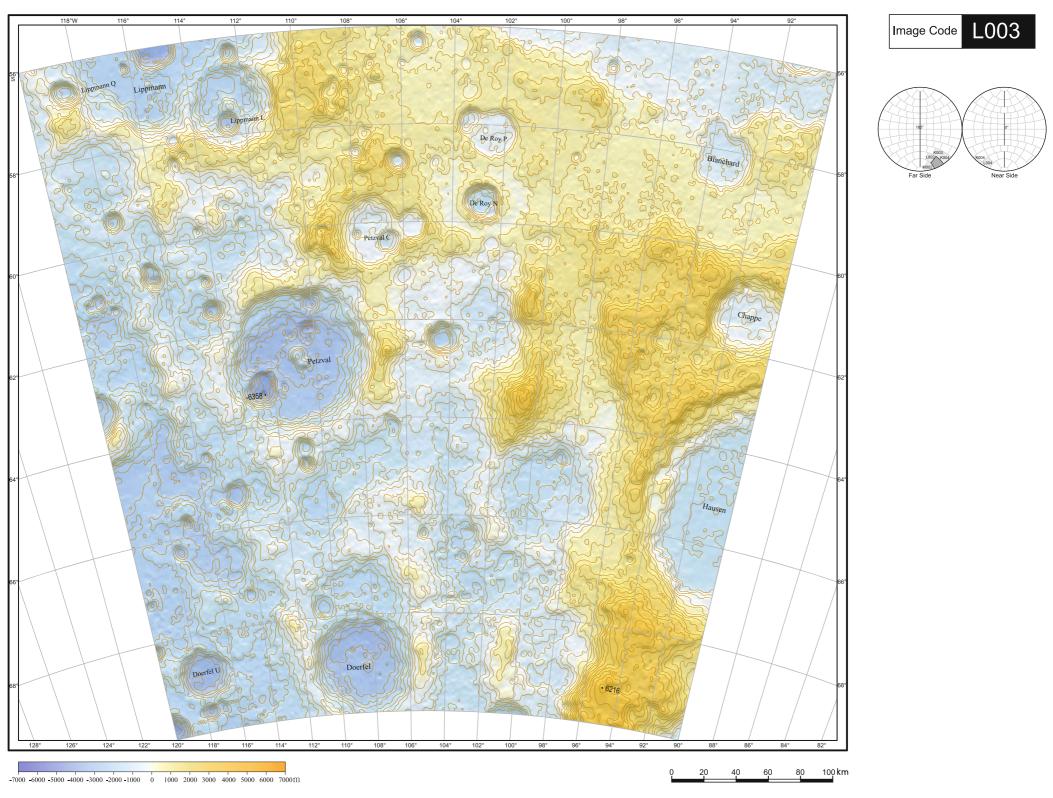


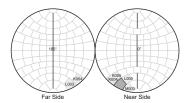


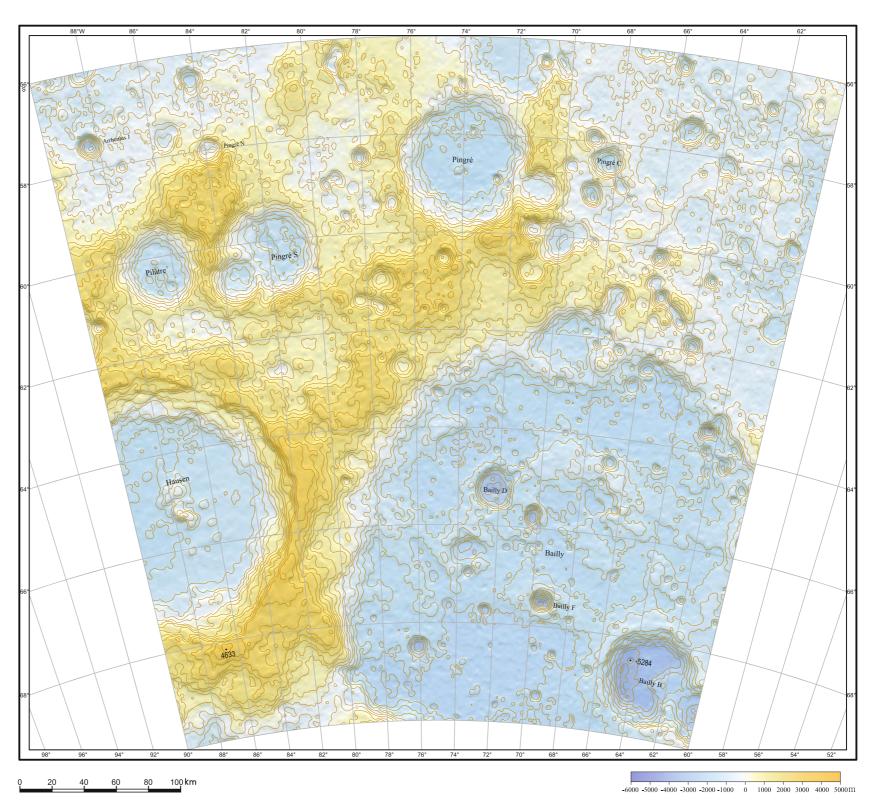


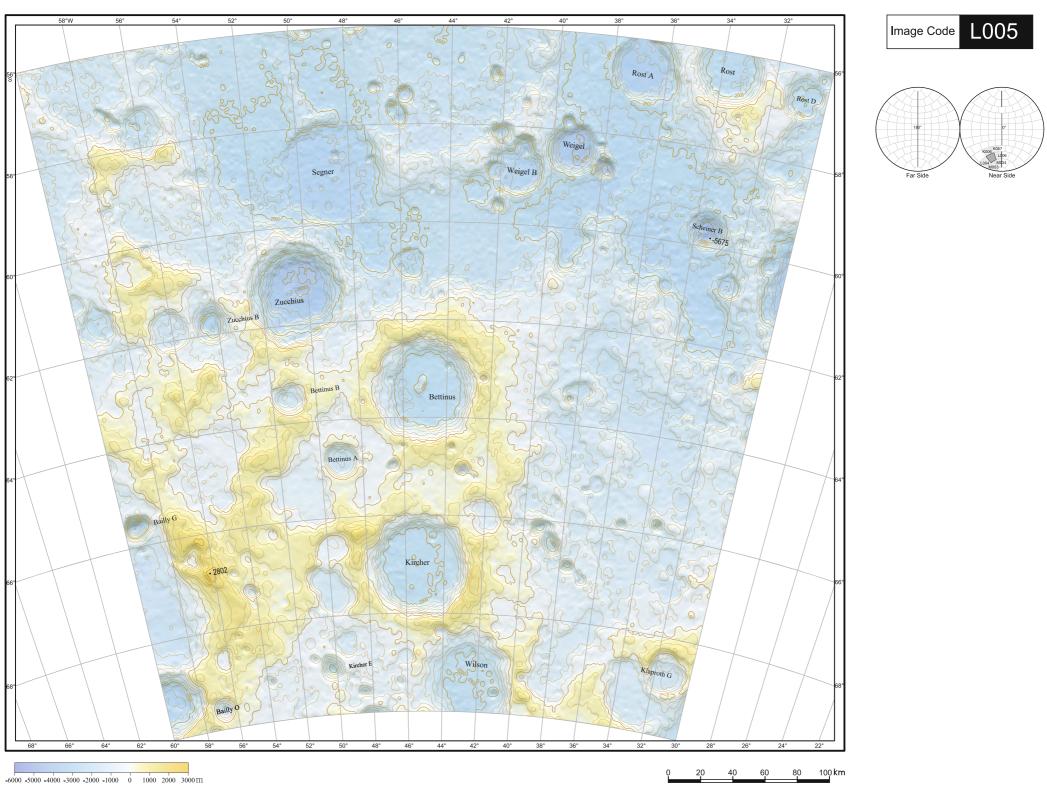


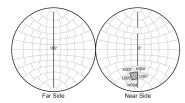


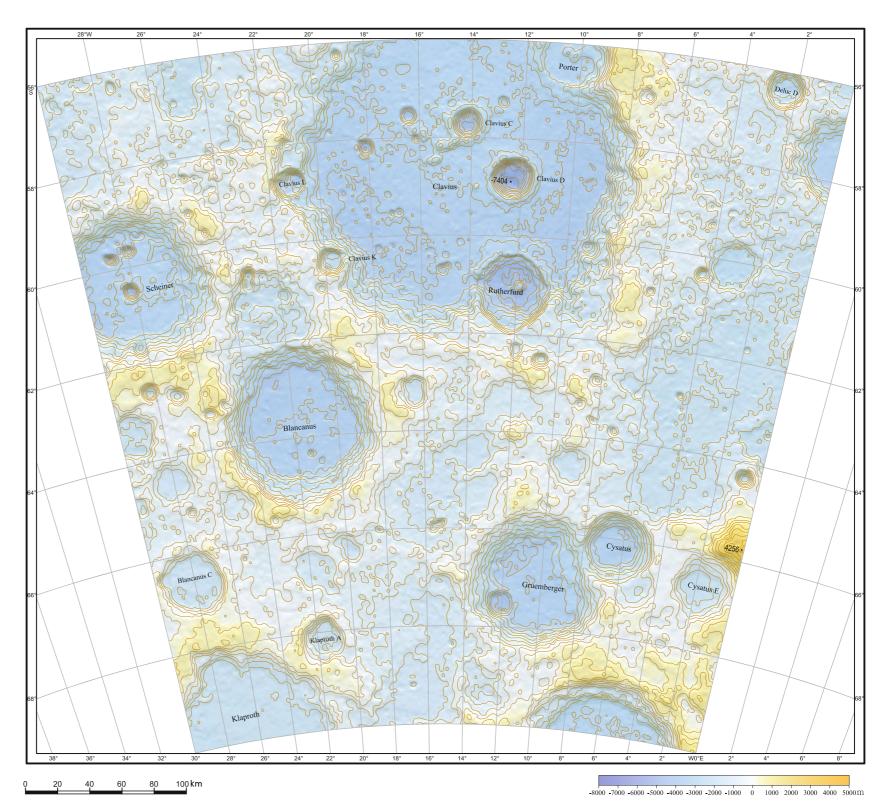


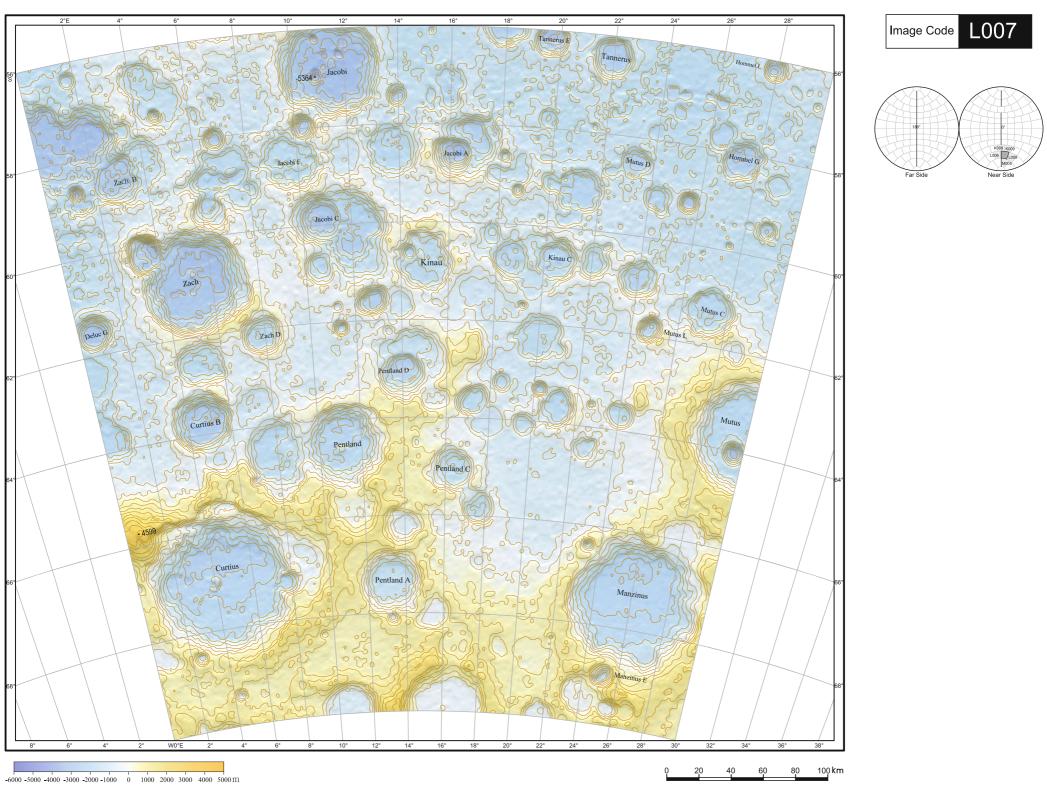


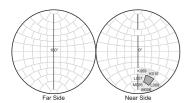


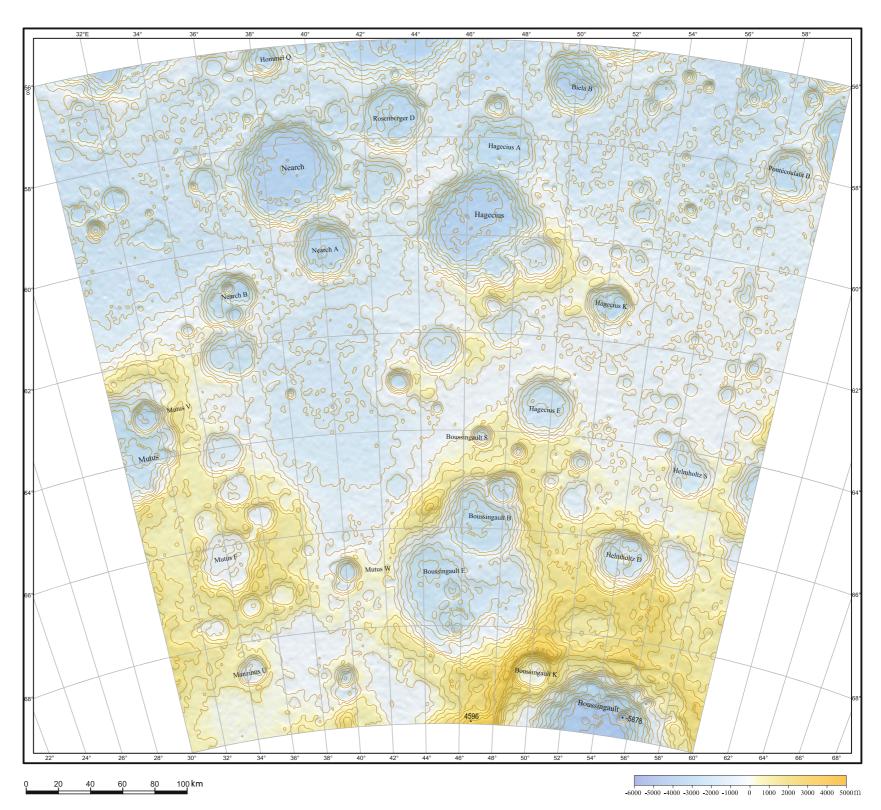


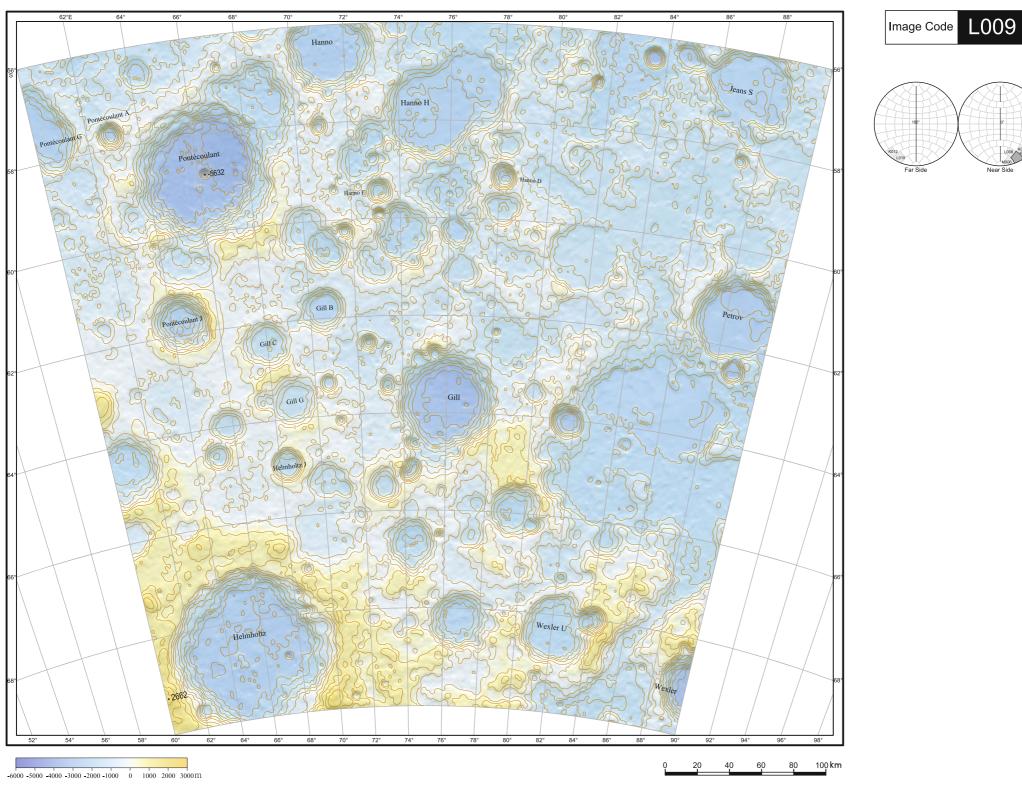


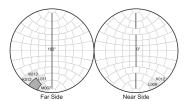


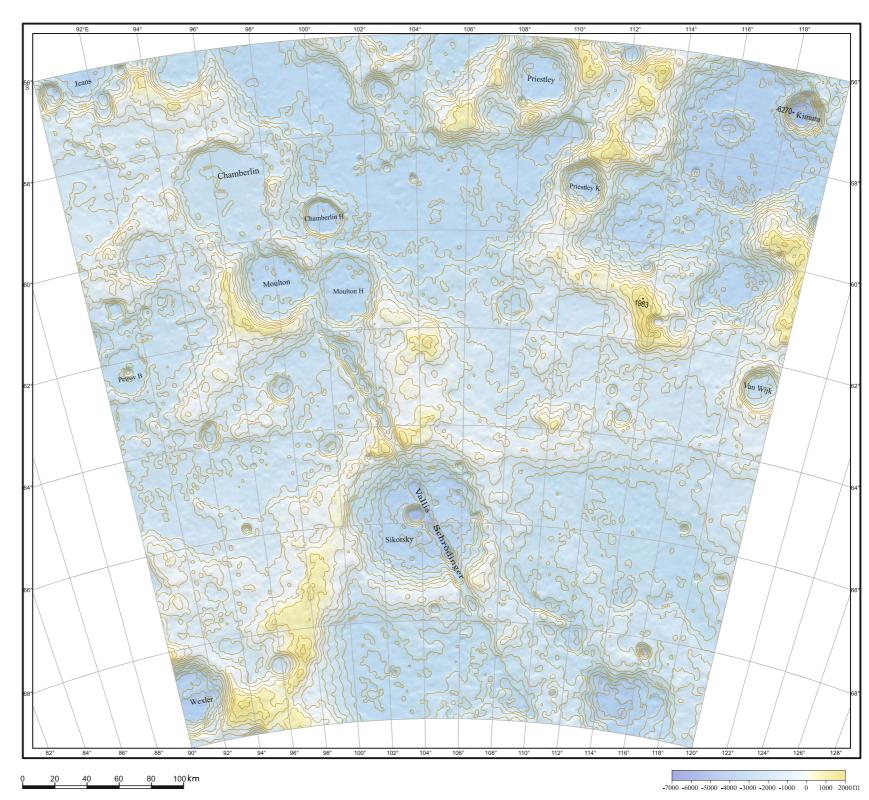


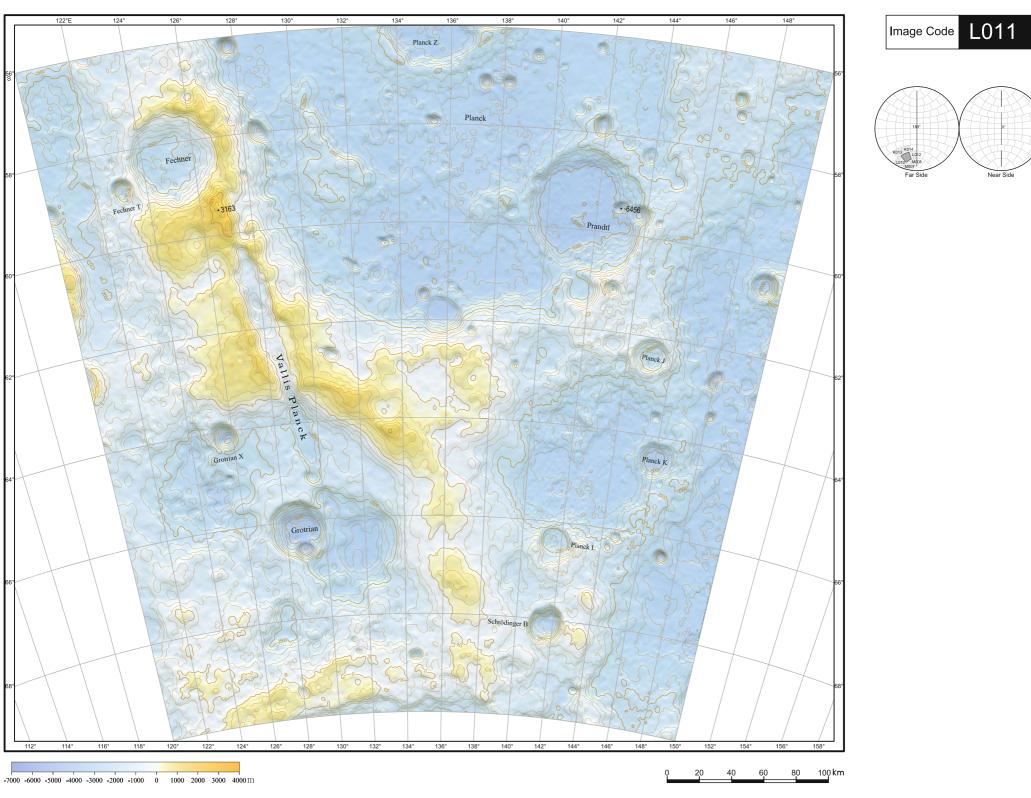


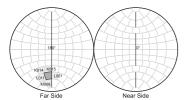


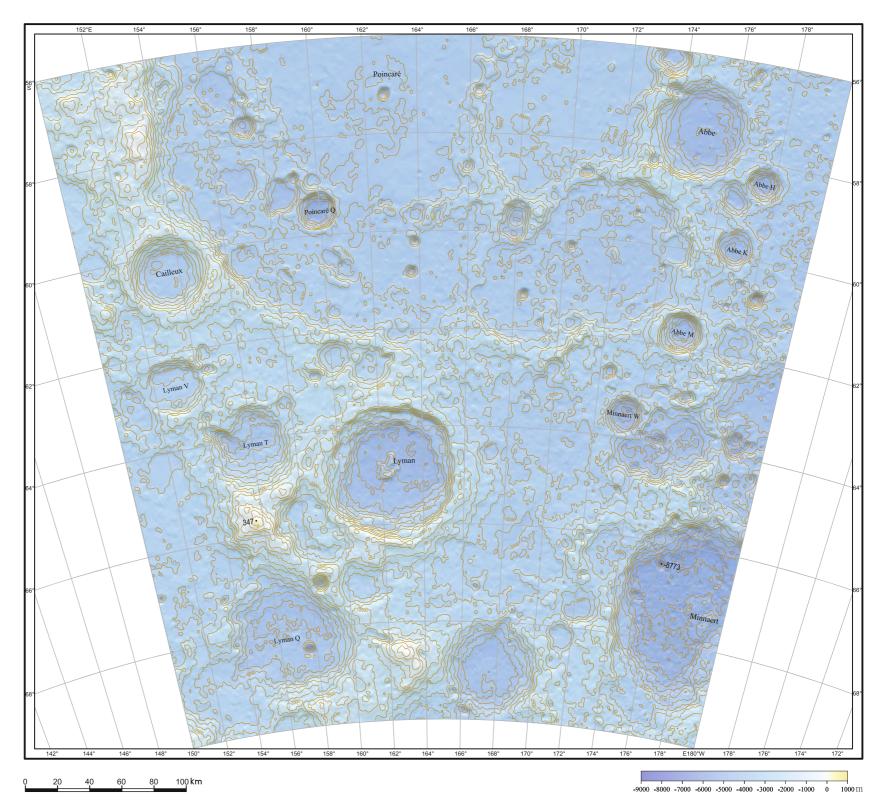


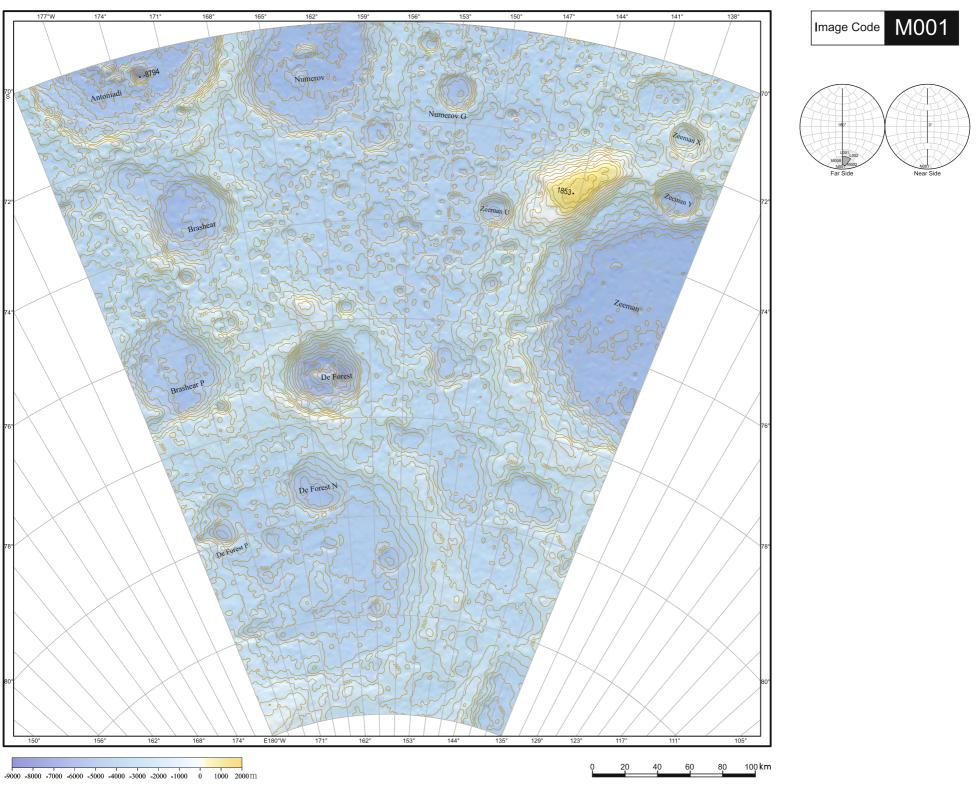


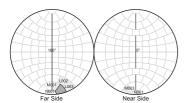


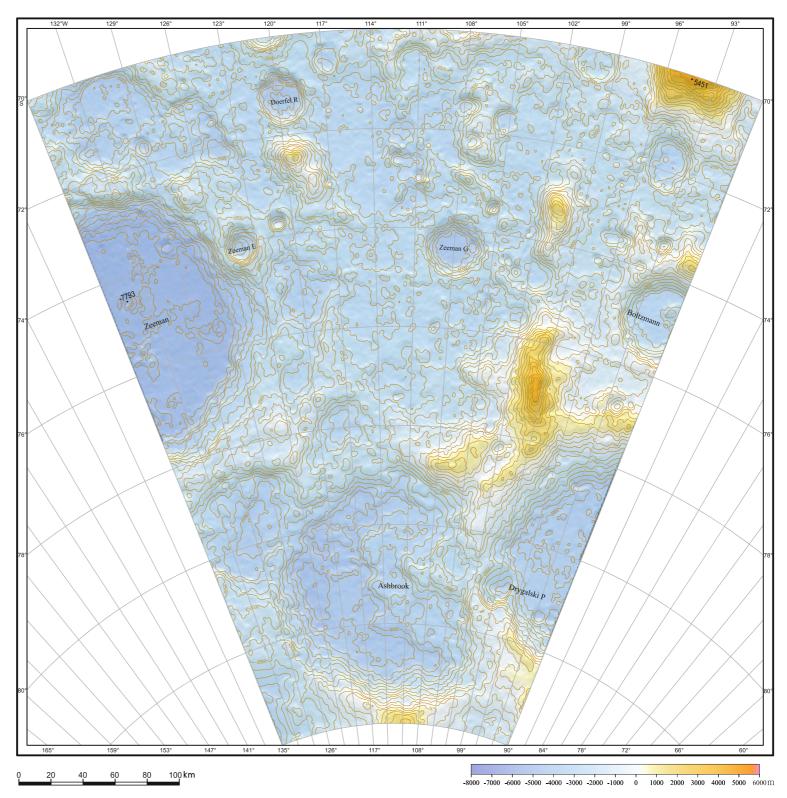












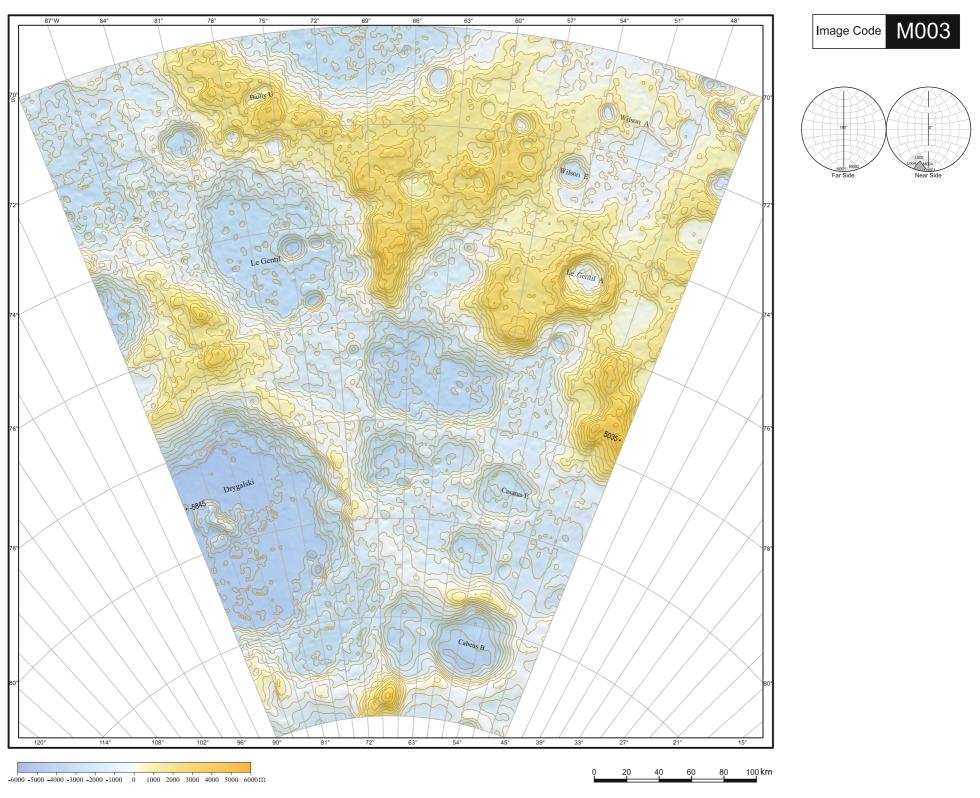
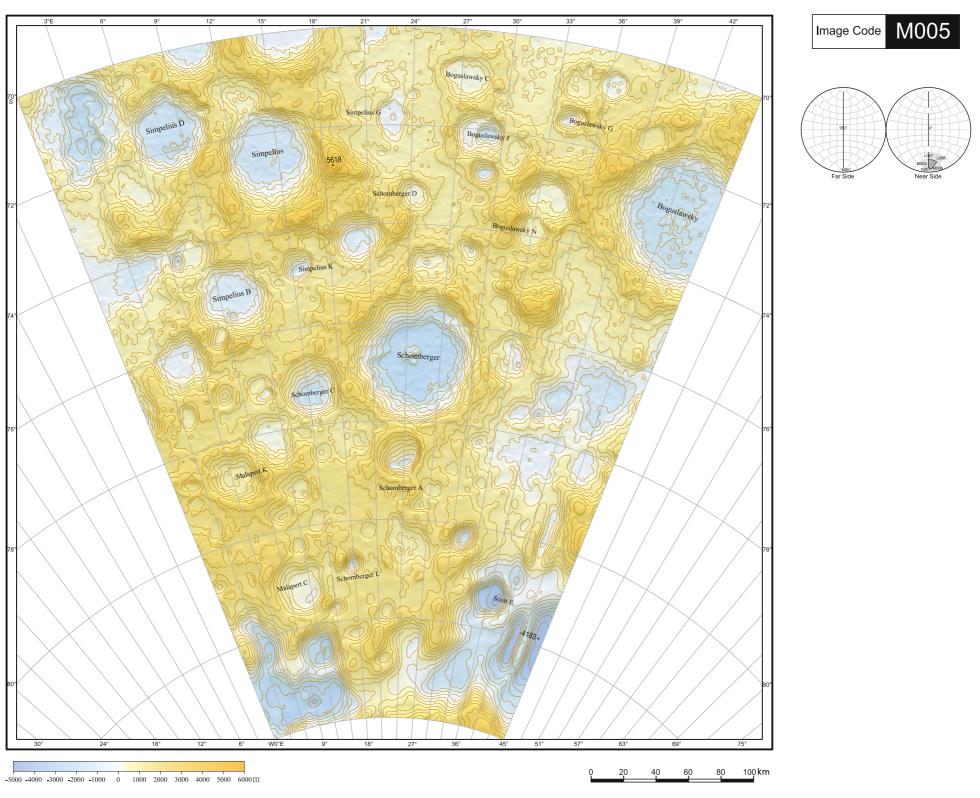
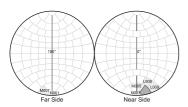
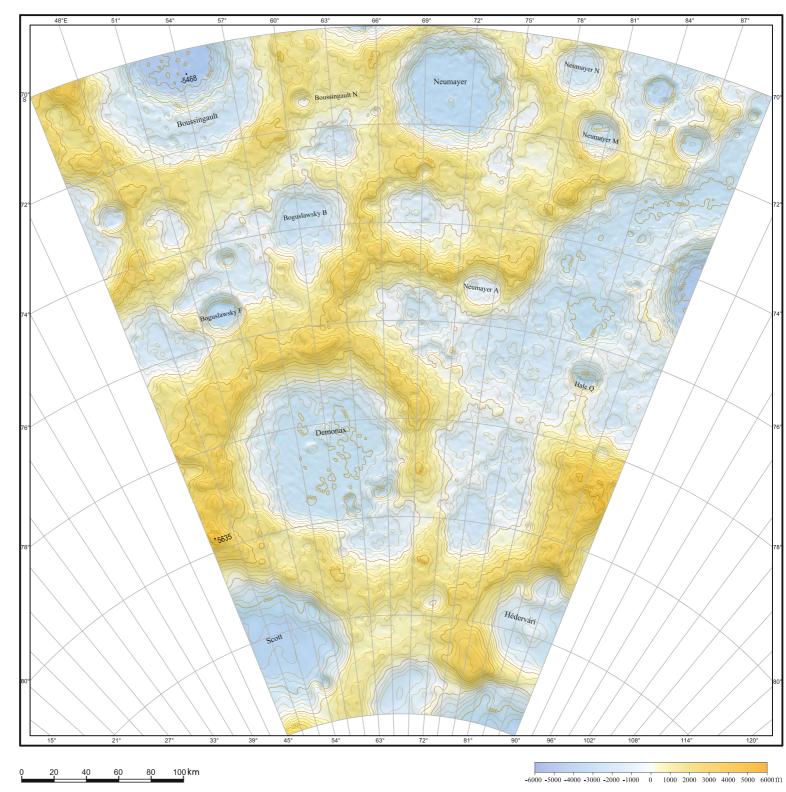


Image Code M004 Newton G 80 100 km

-5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000 6000m







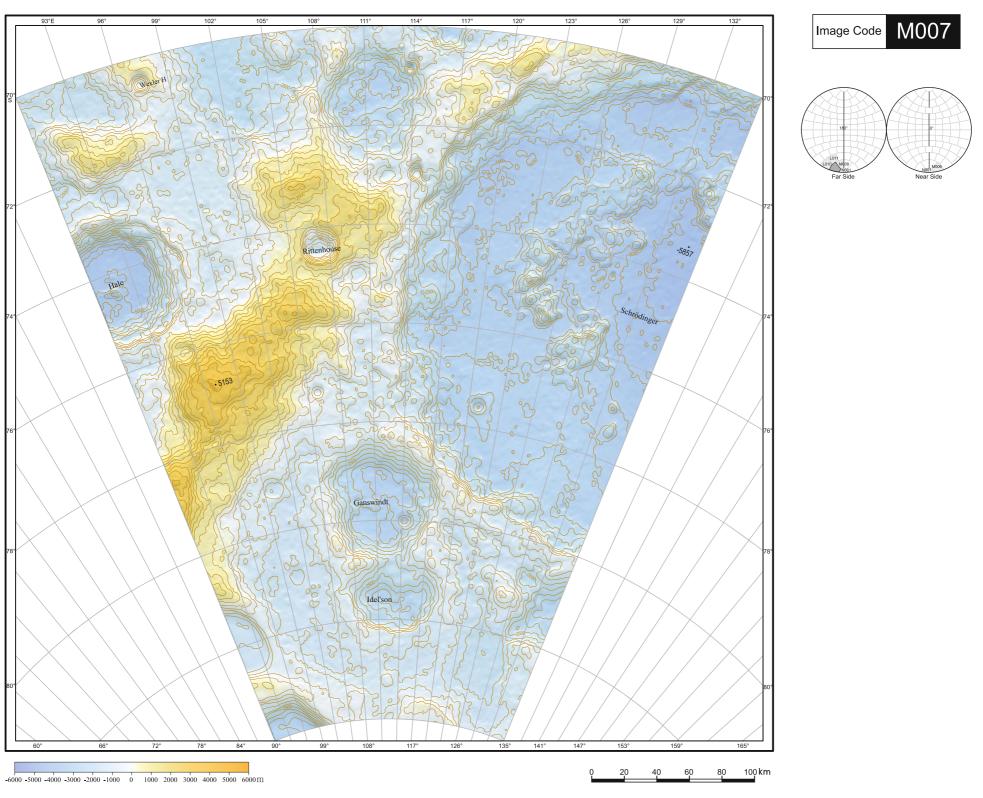


Image Code M008 Braude E180°W 123° 129° 135° 144° 153° 174° 40 60 80 100 km -7000 -6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000m

Appendix-Gazetteer

The appendix lists all of the lunar place names marked in this atlas. The lunar place names are from the Gazetteer of Planetary Nomenclature, released by International Astronomical Union (IAU) Working Group for Planetary System Nomenclature (WG-PSN). Before Jan 1,2012, the Gazetteer of Planetary Nomenclature collected 9099 historically used lunar place names, including 8990 valid names approved by IAU and 109 invalid names abandoned or disapproved by IAU. In the naming system, the satellite feature is a feature that shares the name of an associated feature. For example, on the Moon the craters referred to as 'Lettered Craters' are classified in the gazetteer as 'Satellite Feature'. Due to space limitations, this appendix lists only 3698 lunar names marked in this atlas, including 1765 satellite feature names.

Name	Lat.	Long.	Size	Page
	Oceanus, O	ceani		
Oceanus Procellarum	18°24'N	57°24'W	2568	75
	Mare, Ma	ria		
Mare Anguis	22°36'N	67°42'E	150	82
Mare Australe	38°54'S	93°00'E	603	162
Mare Cognitum	10°00'S	23°06'W	376	117
Mare Crisium	17°00'N	59°06'E	418	82
Mare Fecunditatis	7°48'S	51°18'E	909	121
Mare Frigoris	56°00'N	1°24'E	1596	29
Mare Humboldtianum	56°48'N	81°30'E	273	32
Mare Humorum	24°24'S	38°36'W	389	136
Mare Imbrium	32°48'N	15°36'W	1123	59
Mare Ingenii	33°42'S	163°30'E	318	166
Mare Insularum	7°30'N	30°54'W	513	97
Mare Marginis	13°18'N	86°06'E	420	103
Mare Moscoviense	27°18'N	147°54'E	277	87
Mare Nectaris	15°12'S	35°30'E	333	140
Mare Nubium	21°18'S	16°36'W	715	138
Mare Orientale	19°24'S	92°48'W	327	133
Mare Serenitatis	28°00'N	17°30'E	707	60
Mare Smythii	1°18'N	87°30'E	373	103
Mare Spumans	1°06'N	65°06'E	139	102

Name	Lat.	Long.	Size	Page		
Mare Tranquillitatis	8°30'N	31°24'E	873	100		
Mare Undarum	6°48'N	68°24'E	243	102		
Mare Vaporum	13°18'N	3°36'E	245	99		
	Lacus, La	cūs				
Lacus Aestatis	15°00'S	69°00'W	90	135		
Lacus Autumni	9°54'S	83°54'W	183	114		
Lacus Bonitatis	23°12'N	43°42'E	92	81		
Lacus Doloris	17°06'N	9°00'E	110	79		
Lacus Excellentiae	35°24'S	44°00'W	184	155		
Lacus Felicitatis	19°00'N	5°00'E	90	79		
Lacus Gaudii	16°12'N	12°36'E	113	79		
Lacus Hiemalis	15°00'N	14°00'E	50	79		
Lacus Lenitatis	14°00'N	12°00'E	80	79		
Lacus Luxuriae	19°00'N	176°00'E	50	88		
Lacus Mortis	45°00'N	27°12'E	151	44		
Lacus Oblivionis	21°00'S	168°00'W	50	129		
Lacus Odii	19°00'N	7°00'E	70	79		
Lacus Perseverantiae	8°00'N	62°00'E	70	102		
Lacus Solitudinis	27°48'S	104°18'E	139	144		
Lacus Somniorum	38°00'N	29°12'E	384	61		
Lacus Spei	43°00'N	65°00'E	80	46		
Lacus Temporis	45°54'N	58°24'E	117	45		
Lacus Timoris	38°48'S	27°18'W	117	156		
Lacus Veris	16°30'S	86°06'W	396	134		
	Planitia, Pla	nitiae				
Planitia Descensus	7°06'N	64°24'W		95		
	Mons, Mo	ntes				
Mons Agnes	18°36'N	5°18'E	1	79		
Mons Ampère	19°00'N	4°00'W	30	78		
Mons André	5°12'N	120°36'E	10	105		
Mons Ardeshir	5°00'N	121°00'E	8	105		
Mons Argaeus	19°00'N	29°00'E	50	80		
Mons Bradley	22°00'N	1°00'E	30	79		
Mons Delisle	29°30'N	35°48'W	30	58		

Name	Lat.	Long.	Size	Page
Mons Dieter	5°00'N	120°12'E	20	105
Mons Dilip	5°36'N	120°48'E	2	105
Mons Esam	14°36'N	35°42'E	8	80
Mons Ganau	4°48'N	120°36'E	14	105
Mons Gruithuisen Delta	36°00'N	39°30'W	20	58
Mons Gruithuisen Gamma	36°36'N	40°30'W	20	57
Mons Hadley	26°30'N	4°42'E	25	79
Mons Hadley Delta	25°48'N	3°48'E	15	79
Mons Hansteen	12°06'S	50°00'W	30	116
Mons Herodotus	27°30'N	53°00'W	5	76
Mons Huygens	20°00'N	2°54'W	40	78
Mons La Hire	27°48'N	25°30'W	25	77
Mons Maraldi	20°18'N	35°18'E	15	80
Mons Moro	12°00'S	19°42'W	10	117
Mons Penck	10°00'S	21°36'E	30	120
Mons Pico	45°42'N	8°54'W	25	43
Mons Piton	40°36'N	1°06'W	25	59
Mons Rümker	40°48'N	58°06'W	70	57
Mons Usov	12°00'N	63°00'E	15	102
Mons Vinogradov	22°24'N	32°24'W	25	77
Mons Vitruvius	19°24'N	30°48'E	15	80
Mons Wolff	17°00'N	6°48'W	35	78
Mont Blanc	45°00'N	1°00'E	25	43
Montes Agricola	29°06'N	54°12'W	141	57
Montes Alpes	46°24'N	0°48'W	281	43
Montes Apenninus	18°54'N	3°42'W	401	78
Montes Archimedes	25°18'N	4°36'W	163	78
Montes Carpatus	14°30'N	24°24'W	361	77
Montes Caucasus	38°24'N	10°00'E	445	60
Montes Cordillera	17°30'S	81°36'W	574	134
Montes Haemus	19°54'N	9°12'E	560	79
Montes Harbinger	27°00'N	41°00'W	90	76
Montes Jura	47°06'N	34°00'W	422	42

Name	Lat.	Long.	Size	Page
Montes Pyrenaeus	15°36'S	41°12'E	164	141
Montes Recti	48°00'N	20°00'W	90	42
Montes Riphaeus	7°42'S	28°06'W	189	117
Montes Rook	20°36'S	82°30'W	791	134
Montes Secchi	3°00'N	43°00'E	50	101
Montes Spitzbergen	35°00'N	5°00'W	60	59
Montes Taurus	28°24'N	41°06'E	172	62
Montes Teneriffe	47°06'N	11°48'W	182	42
	Dorsum, D	orsa		
Dorsa Aldrovandi	24°00'N	28°30'E	136	80
Dorsa Andrusov	1°00'S	57°00'E	160	122
Dorsa Argand	28°06'N	40°36'W	109	57
Dorsa Barlow	15°00'N	31°00'E	120	80
Dorsa Burnet	28°24'N	57°00'W	194	57
Dorsa Cato	1°00'N	47°00'E	140	101
Dorsa Dana	3°00'N	90°00'E	70	103
Dorsa Ewing	10°12'S	39°24'W	141	116
Dorsa Geikie	4°36'S	52°30'E	228	121
Dorsa Harker	14°30'N	64°00'E	197	82
Dorsa Lister	20°18'N	23°48'E	203	80
Dorsa Mawson	7°00'S	53°00'E	132	121
Dorsa Rubey	10°00'S	42°00'W	100	116
Dorsa Smirnov	27°18'N	25°18'E	156	80
Dorsa Sorby	19°00'N	14°00'E	80	79
Dorsa Stille	27°00'N	19°00'W	80	77
Dorsa Tetyaev	19°54'N	64°12'E	176	82
Dorsa Whiston	29°24'N	56°24'W	85	57
Dorsum Arduino	24°54'N	35°48'W	107	77
Dorsum Azara	26°42'N	19°12'E	105	80
Dorsum Bucher	31°00'N	39°00'W	90	58
Dorsum Buckland	20°24'N	12°48'E	380	79
Dorsum Cayeux	1°36'N	51°12'E	84	101
Dorsum Cloos	1°00'N	91°00'E	100	104
Dorsum Cushman	1°00'N	49°00'E	80	101
Dorsum Gast	24°00'N	9°00'E	60	79

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Dorsum Guettard	10°00'S	18°00'W	40	117
Dorsum Heim	32°00'N	29°48'W	148	58
Dorsum Higazy	28°00'N	17°00'W	60	59
Dorsum Nicol	18°00'N	23°00'E	50	80
Dorsum Niggli	29°00'N	52°00'W	50	57
Dorsum Oppel	18°42'N	52°36'E	268	81
Dorsum Owen	25°00'N	11°00'E	50	79
Dorsum Scilla	32°48'N	60°24'W	108	56
Dorsum Termier	11°00'N	58°00'E	90	102
Dorsum Thera	24°24'N	31°24'W	7	77
Dorsum Von Cotta	23°12'N	11°54'E	199	79
Dorsum Zirkel	28°06'N	23°30'W	193	58
	Crater, Cra	ters		
Abbe	57°18'S	175°12'E	66	193
Abbot	5°36'N	54°48'E	10	102
Abel	34°30'S	87°18'E	122	162
Abenezra	21°00'S	11°54'E	42	139
Abetti	20°06'N	27°48'E	1	80
Abul Wáfa	1°00'N	116°36'E	55	105
Abulfeda	13°48'S	13°54'E	65	119
Acosta	5°36'S	60°06'E	13	122
Adams	31°54'S	68°12'E	66	161
Aepinus	88°01'N	108°18'W	17	14
Agatharchides	19°48'S	30°54'W	48	137
Agrippa	4°06'N	10°30'E	44	99
Airy	18°06'S	5°42'E	36	139
Aitken	16°48'S	173°24'E	135	148
Akis	20°00'N	31°48'W	2	77
Alan	10°54'S	6°06'W	2	118
Al-Bakri	14°18'N	20°12'E	12	80
Albategnius	11°42'S	4°18'E	114	119
Al-Biruni	17°54'N	92°30'E	77	84
Alden	23°36'S	110°48'E	104	145
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Alekhin	68°12'S	131°18'W	70	183
Alexander	40°18'N	13°30'E	81	60
Alfraganus	5°24'S	19°00'E	20	120
Alhazen	15°54'N	71°48'E	32	82
Aliacensis	30°36'S	5°12'E	79	158
Al-Khwarizmi	7°06'N	106°24'E	65	104
Almanon	16°48'S	15°12'E	49	139
Al-Marrakushi	10°24'S	55°48'E	8	122
Aloha	29°48'N	53°54'W	3	57
Alpetragius	16°00'S	4°30'W	39	138
Alphonsus	13°42'S	3°12'W	108	118
Alter	18°42'N	107°30'W	64	73
Ameghino	3°18'N	57°00'E	9	102
Amici	9°54'S	172°06'W	54	109
Ammonius	8°30'S	0°48'W	8	118
Amontons	5°18'S	46°48'E	2	121
Amundsen	84°18'S	85°36'E	101	15
Anaxagoras	73°24'N	10°06'W	50	19
Anaximander	66°54'N	51°18'W	67	28
Anaximenes	72°30'N	44°30'W	80	19
Anděl	10°24'S	12°24'E	35	119
Anders	41°18'S	142°54'W	40	150
Anderson	15°48'N	171°06'E	109	88
Andersson	49°42'S	95°18'W	13	170
Andronov	22°42'S	146°06'E	16	147
Ango	20°30'N	32°18'W	1	77
Angström	29°54'N	41°36'W	9	57
Ann	25°06'N	0°06'W	3	78
Annegrit	29°24'N	25°36'W	1	58
Ansgarius	12°42'S	79°42'E	94	123
Antoniadi	69°42'S	172°00'W	143	182
Anuchin	49°00'S	101°18'E	57	178
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Apollonius	4°30'N	61°06'E	53	102	Babakin	20°48'S	123°18'E	20	145	Bel'kovich	61°06'N	90°12'E	214	33
Appleton	37°12'N	158°18'E	63	67	Babbage	59°42'N	57°06'W	143	28	Bell	21°48'N	96°24'W	86	73
Arago	6°12'N	21°24'E	26	100	Babcock	4°12'N	93°54'E	99	104	Bellinsgauzen	60°36'S	164°36'W	63	182
Aratus	23°36'N	4°30'E	10	79	Back	1°06'N	80°42'E	35	103	Bellot	12°24'S	48°12'E	17	121
Archimedes	29°42'N	4°00'W	82	59	Backlund	16°00'S	103°00'E	75	144	Belopol'skiy	17°12'S	128°06'W	59	131
Archytas	58°42'N	5°00'E	31	30	Baco	51°00'S	19°06'E	69	175	Belyaev	23°18'N	143°30'E	54	86
Argelander	16°30'S	5°48'E	34	139	Baillaud	74°36'N	37°30'E	89	20	Benedict	4°24'N	141°30'E	14	106
Ariadaeus	4°36'N	17°18'E	11	99	Bailly	66°30'S	69°06'W	287	185	Bergman	7°00'N	137°30'E	21	106
Aristarchus	23°42'N	47°24'W	40	76	Baily	49°42'N	30°24'E	26	44	Bergstrand	18°48'S	176°18'E	43	148
Aristillus	33°54'N	1°12'E	55	60	Balandin	18°54'S	152°36'E	12	147	Berkner	25°12'N	105°12'W	86	73
Aristoteles	50°12'N	17°24'E	87	44	Balboa	19°06'N	83°12'W	69	74	Berlage	63°12'S	162°48'W	92	182
Armiński	16°24'S	154°12'E	26	147	Baldet	53°18'S	151°06'W	55	168	Bernoulli	35°00'N	60°42'E	47	63
Armstrong	1°24'N	25°00'E	4	100	Ball	35°54'S	8°24'W	41	157	Berosus	33°30'N	69°54'E	74	63
Arnold	66°48'N	35°54'E	94	31	Balmer	20°18'S	69°48'E	138	142	Berzelius	36°36'N	50°54'E	50	62
Arrhenius	55°36'S	91°18'W	40	170	Banachiewicz	5°12'N	80°06'E	92	103	Bessarion	14°54'N	37°18'W	10	76
Artamonov	25°30'N	103°30'E	60	84	Bancroft	28°00'N	6°24'W	13	59	Bessel	21°48'N	17°54'E	15	80
Artem'ev	10°48'N	144°24'W	67	90	Banting	26°36'N	16°24'E	5	79	Bettinus	63°24'S	44°48'W	71	186
Artemis	25°00'N	25°24'W	2	77	Barbier	23°48'S	157°54'E	66	147	Bhabha	55°06'S	164°30'W	64	167
Artsimovich	27°36'N	36°36'W	8	76	Barkla	10°42'S	67°12'E	42	122	Bi Sheng	78°20'N	148°22'E	55	23
Aryabhata	6°12'N	35°06'E	22	100	Barnard	29°30'S	85°36'E	105	162	Bianchini	48°42'N	34°18'W	38	42
Arzachel	18°12'S	1°54'W	96	138	Barocius	44°54'S	16°48'E	82	175	Biela	54°54'S	51°18'E	76	176
Asada	7°18'N	49°54'E	12	101	Barringer	28°00'S	149°42'W	68	130	Bilharz	5°48'S	56°18'E	43	122
Asclepi	55°06'S	25°24'E	42	175	Barrow	71°18'N	7°42'E	92	20	Billy	13°48'S	50°06'W	45	116
Ashbrook	81°24'S	112°30'W	156	195	Bartels	24°30'N	89°48'W	55	74	Bingham	8°06'N	115°06'E	33	105
Aston	32°54'N	87°42'W	43	55	Bawa	25°18'S	102°36'E	1	144	Biot	22°36'S	51°06'E	12	141
Atlas	46°42'N	44°24'E	87	45	Bayer	51°36'S	35°00'W	47	173	Birkeland	30°12'S	173°54'E	82	166
Atwood	5°48'S	57°42'E	29	122	Beals	37°18'N	86°30'E	48	64	Birkhoff	58°42'N	146°06'W	345	25
Autolycus	30°42'N	1°30'E	39	60	Beaumont	18°00'S	28°48'E	53	140	Birmingham	65°06'N	10°30'W	92	29
Auwers	15°06'N	17°12'E	20	79	Becquerel	40°42'N	129°42'E	65	66	Birt	22°24'S	8°30'W	16	138
Auzout	10°18'N	64°06'E	32	102	Bečvář	1°54'S	125°12'E	67	125	Bjerknes	38°24'S	113°00'E	48	163
Avery	1°24'S	81°24'E	9	123	Beer	27°06'N	9°06'W	9	78	Black	9°12'S	80°24'E	18	123
Avicenna	39°42'N	97°12'W	74	55	Behaim	16°30'S	79°24'E	55	143	Blackett	37°30'S	116°06'W	141	152
Avogadro	63°06'N	164°54'E	139	35	Beijerinck	13°30'S	151°48'E	70	127	Blagg	1°18'N	1°30'E	5	99
Azophi	22°06'S	12°42'E	47	139	Beketov	16°18'N	29°12'E	8	80	Blancanus	63°48'S	21°24'W	117	187

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Blazhko	31°36'N	148°00'W	54	52	Bredikhin	17°18'N	158°12'W	59	70	Cameron	6°12'N	45°54'E	10	101
Bliss	53°00'N	13°30'W	20	42	Breislak	48°12'S	18°18'E	49	175	Campanus	28°00'S	27°48'W	48	137
Bobillier	19°36'N	15°30'E	6	79	Brenner	39°00'S	39°18'E	97	159	Campbell	45°18'N	151°24'E	219	49
Bobone	26°54'N	131°48'W	31	71	Brewster	23°18'N	34°42'E	10	80	Cannizzaro	55°36'N	99°36'W	56	39
Bode	6°42'N	2°24'W	18	98	Brianchon	75°00'N	86°12'W	134	18	Cannon	19°54'N	81°24'E	56	83
Boethius	5°36'N	72°18'E	10	103	Bridgman	43°30'N	137°06'E	80	49	Cantor	38°12'N	118°36'E	81	65
Boguslawsky	72°54'S	43°12'E	97	198	Briggs	26°30'N	69°06'W	37	75	Capella	7°30'S	35°00'E	49	120
Bohnenberger	16°12'S	40°00'E	33	141	Brisbane	49°06'S	68°30'E	44	177	Capuanus	34°06'S	26°42'W	59	156
Bohr	12°24'N	86°36'W	71	94	Bronk	26°06'N	134°30'W	64	71	Cardanus	13°12'N	72°30'W	49	94
Bok	20°12'S	171°36'W	45	129	Brouwer	36°12'S	126°00'W	158	151	Carlini	33°42'N	24°06'W	10	58
Boltzmann	74°54'S	90°42'W	76	195	Brown	46°24'S	17°54'W	34	173	Carlos	24°54'N	2°18'E	4	79
Bolyai	33°36'S	125°54'E	135	164	Bruce	1°06'N	0°24'E	6	99	Carmichael	19°36'N	40°24'E	20	81
Bombelli	5°18'N	56°12'E	10	102	Brunner	9°54'S	90°54'E	53	124	Carnot	52°18'N	143°30'W	126	37
Bondarenko	17°48'S	136°18'E	30	146	Buch	38°48'S	17°42'E	53	158	Carol	8°30'N	122°18'E	8	105
Bonpland	8°18'S	17°24'W	60	118	Buffon	40°24'S	133°24'W	106	151	Carpenter	69°24'N	50°54'W	59	28
Boole	63°42'N	87°24'W	63	27	Buisson	1°24'S	112°30'E	56	125	Carrel	10°42'N	26°42'E	15	100
Borda	25°06'S	46°36'E	44	141	Bullialdus	20°42'S	22°12'W	60	137	Carrillo	2°12'S	80°54'E	16	123
Borel	22°18'N	26°24'E	4	80	Bunsen	41°24'N	85°18'W	52	55	Carrington	44°00'N	62°06'E	30	46
Boris	30°36'N	33°30'W	1	58	Burckhardt	31°06'N	56°30'E	56	62	Cartan	4°12'N	59°18'E	15	102
Borman	38°48'S	147°42'W	50	150	Bürg	45°00'N	28°12'E	39	44	Carver	43°00'S	126°54'E	59	179
Born	6°00'S	66°48'E	14	122	Burnham	13°54'S	7°18'E	24	119	Casatus	72°48'S	29°30'W	108	197
Bosch	86°49'N	133°36'E	18	14	Büsching	38°00'S	20°00'E	52	158	Cassegrain	52°24'S	113°30'E	55	179
Boscovich	9°48'N	11°06'E	46	99	Butlerov	12°30'N	108°42'W	40	92	Cassini	40°12'N	4°36'E	56	60
Bose	53°30'S	170°00'W	91	167	Buys-Ballot	20°48'N	174°30'E	55	88	Catalán	45°42'S	87°18'W	25	170
Boss	45°48'N	89°12'E	47	47	Byrd	85°18'N	9°48'E	93	14	Catharina	18°06'S	23°24'E	104	140
Bouguer	52°18'N	35°48'W	22	41	Byrgius	24°42'S	65°18'W	87	135	Cauchy	9°36'N	38°36'E	12	101
Boussingault	70°12'S	54°36'E	142	199	C. Herschel	34°30'N	31°12'W	13	58	Cavalerius	5°06'N	66°48'W	57	95
Bowditch	25°00'S	103°06'E	40	144	C. Mayer	63°12'N	17°18'E	38	30	Cavendish	24°30'S	53°42'W	56	136
Bowen	17°36'N	9°06'E	8	79	Cabannes	60°54'S	169°36'W	80	182	Caventou	29°48'N	29°24'W	3	58
Boyle	53°06'S	178°06'E	57	181	Cabeus	84°54'S	35°30'W	98	15	Cayley	4°00'N	15°06'E	14	99
Brackett	17°54'N	23°36'E	8	80	Cai Lun	80°30'N	113°49'E	42	22	Celsius	34°06'S	20°06'E	36	159
Bragg	42°30'N	102°54'W	84	39	Cailleux	60°48'S	153°18'E	50	193	Censorinus	0°24'S	32°42'E	3	120
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Chadwick	52°42'S	101°18'W	30	170	Collins	1°18'N	23°42'E	2	100	Daedalus	5°54'S	179°24'E	93	128
Chaffee	38°48'S	153°54'W	49	150	Colombo	15°06'S	45°48'E	76	141	Dag	18°42'N	5°18'E	0	79
Challis	79°30'N	9°12'E	55	20	Compton	55°18'N	103°48'E	162	47	Daguerre	11°54'S	33°36'E	46	120
Chalonge	21°12'S	117°18'W	30	132	Comrie	23°18'N	112°42'W	59	72	Dale	9°36'S	82°54'E	22	123
Chamberlin	58°54'S	95°42'E	58	191	Comstock	21°48'N	121°30'W	72	72	D'Alembert	50°48'N	163°54'E	248	50
Champollion	37°24'N	175°12'E	58	68	Condon	1°54'N	60°24'E	34	102	Dalton	17°06'N	84°18'W	60	74
Chandler	43°48'N	171°30'E	85	50	Condorcet	12°06'N	69°36'E	74	102	Daly	5°42'N	59°36'E	17	102
Chang Heng	19°00'N	112°12'E	43	85	Congreve	0°12'S	167°18'W	57	109	Damoiseau	4°48'S	61°06'W	36	115
Chang-Ngo	12°42'S	2°06'W	3	118	Conon	21°36'N	2°00'E	21	79	Daniell	35°18'N	31°06'E	29	61
Chant	40°00'S	109°12'W	33	152	Cook	17°30'S	48°54'E	46	141	Danjon	11°24'S	124°00'E	71	125
Chaplygin	6°12'S	150°18'E	137	127	Cooper	52°54'N	175°36'E	36	50	Dante	25°30'N	180°00'E	54	88
Chapman	50°24'N	100°42'W	71	39	Copernicus	9°42'N	20°06'W	93	97	Darney	14°30'S	23°30'W	15	137
Chappe	61°12'S	91°30'W	59	184	Cori	50°36'S	151°54'W	65	168	D'Arrest	2°18'N	14°42'E	30	99
Chappell	54°42'N	177°00'W	80	36	Coriolis	0°06'N	171°48'E	78	108	D'Arsonval	10°18'S	124°36'E	28	125
Charles	29°54'N	26°24'W	1	58	Couder	4°48'S	92°24'W	21	113	Darwin	20°12'S	69°30'W	120	135
Charlier	36°36'N	131°30'W	99	53	Coulomb	54°42'N	114°36'W	89	38	Das	26°36'S	136°48'W	38	131
Chaucer	3°42'N	140°00'W	45	91	Courtney	25°06'N	30°48'W	1	77	Daubrée	15°42'N	14°42'E	14	79
Chauvenet	11°30'S	137°00'E	81	126	Cremona	67°30'N	90°36'W	85	26	Davisson	37°30'S	174°36'W	87	149
Chawla	42°48'S	147°30'W	15	168	Crile	14°12'N	46°00'E	9	81	Davy	11°48'S	8°06'W	34	118
Chebyshev	33°42'S	133°06'W	178	151	Crocco	47°30'S	150°12'E	75	180	Dawes	17°12'N	26°24'E	18	80
Chernyshev	47°18'N	174°12'E	58	50	Crommelin	68°06'S	146°54'W	94	183	Dawson	67°24'S	134°42'W	45	183
Chevallier	44°54'N	51°12'E	52	45	Crookes	10°18'S	164°30'W	49	109	De Forest	77°18'S	162°06'W	57	194
Ching-Te	20°00'N	30°00'E	4	80	Crozier	13°30'S	50°48'E	22	121	de Gasparis	25°54'S	50°42'W	30	136
Chladni	4°00'N	1°06'E	13	99	Crüger	16°42'S	66°48'W	45	135	de Gerlache	88°30'S	87°06'W	32	15
Chrétien	45°54'S	162°54'E	88	181	Ctesibius	0°48'N	118°42'E	36	105	De La Rue	59°06'N	52°18'E	134	31
Cichus	33°18'S	21°06'W	40	156	Curie	22°54'S	91°00'E	151	144	De Moraes	49°30'N	143°12'E	53	49
Clairaut	47°42'S	13°54'E	75	175	Curtis	14°36'N	56°36'E	2	82	De Morgan	3°18'N	14°54'E	10	99
Clark	38°24'S	118°54'E	49	163	Curtius	67°12'S	4°24'E	95	188	De Roy	55°18'S	99°06'W	43	170
Clausius	36°54'S	43°48'W	24	155	Cusanus	72°00'N	70°48'E	63	21	De Sitter	80°06'N	39°36'E	64	20
Clavius	58°48'S	14°06'W	245	187	Cuvier	50°18'S	9°54'E	75	174	De Vico	19°42'S	60°12'W	20	135
Cleomedes	27°42'N	56°00'E	125	82	Cyrano	20°30'S	157°42'E	80	147	De Vries	19°54'S	176°42'W	59	129
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Clerke	21°42'N	29°48'E	6	80	Cysatus	66°12'S	6°06'W	48	187	Debus	10°30'S	99°36'E	20	124
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Dechen	46°06'N	68°12'W	12	40	Drebbel	40°54'S	49°00'W	
Delambre	1°54'S	17°30'E	51	119	Dreyer	10°00'N	96°54'E	
Delaunay	22°12'S	2°30'E	46	139	Drude	38°30'S	91°48'W	
Delia	10°54'S	6°06'W	2	118	Dryden	33°00'S	155°12'W	
Delisle	29°54'N	34°36'W	25	58	Drygalski	79°18'S	84°54'W	
Dellinger	6°48'S	140°36'E	81	126	Dubyago	4°24'N	70°00'E	
Delmotte	27°06'N	60°12'E	32	82	Dufay	5°30'N	169°30'E	
Delporte	16°00'S	121°36'E	45	145	Dugan	64°12'N	103°18'E	
Deluc	55°00'S	2°48'W	46	174	Dunér	44°48'N	179°30'E	
Dembowski	2°54'N	7°12'E	26	99	Dunthorne	30°06'S	31°36'W	
Democritus	62°18'N	35°00'E	39	31	Dyson	61°18'N	121°12'W	
Demonax	77°54'S	60°48'E	128	199	Dziewulski	21°12'N	98°54'E	
Denning	16°24'S	142°36'E	44	146	Eckert	17°18'N	58°18'E	
Desargues	70°12'N	73°18'W	85	18	Eddington	21°18'N	72°12'W	
Descartes	11°42'S	15°42'E	48	119	Edison	25°00'N	99°06'E	
Deseilligny	21°06'N	20°36'E	6	80	Edith	25°48'S	102°18'E	
Deslandres	33°06'S	4°48'W	256	157	Egede	48°42'N	10°36'E	
Deutsch	24°06'N	110°30'E	66	85	Ehrlich	40°54'N	172°24'W	
Dewar	2°42'S	165°30'E	50	128	Eichstadt	22°36'S	78°18'W	
Diana	14°18'N	35°42'E	2	80	Eijkman	63°06'S	141°30'W	
Diderot	20°24'S	121°30'E	20	145	Eimmart	24°00'N	64°48'E	
Dionysius	2°48'N	17°18'E	18	99	Einstein	16°18'N	88°42'W	
Diophantus	27°36'N	34°18'W	17	77	Einthoven	4°54'S	109°36'E	
Dirichlet	11°06'N	151°24'W	47	90	Elger	35°18'S	29°48'W	
Dobrovol'skiy	12°48'S	129°42'E	38	126	Ellerman	25°18'S	120°06'W	
Doerfel	69°06'S	107°54'W	68	184	Ellison	55°06'N	107°30'W	
Dollond	10°24'S	14°24'E	11	119	Elmer	10°06'S	84°06'E	
Donati	20°42'S	5°12'E	36	139	Elvey	8°48'N	100°30'W	
Donna	7°12'N	38°18'E	2	101	Emden	63°18'N	177°18'W	
Donner	31°24'S	98°00'E	58	162	Encke	4°36'N	36°36'W	
Doppelmayer	28°30'S	41°24'W	63	155	Endymion	53°54'N	57°00'E	
Doppler	12°36'S	159°36'W	110	110	Engel'gardt	5°42'N	159°00'W	
Douglass	35°54'N	122°24'W	49	53	Eötvös	35°30'S	133°48'E	
Dove	46°42'S	31°30'E	30	175	Epigenes	67°30'N	4°36'W	
Draper	17°36'N	21°42'W	8	77	Epimenides	40°54'S	30°12'W	

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Erro	5°42'N	98°30'E	61	104
Esclangon	21°30'N	42°06'E	15	81
Esnault-Pelterie	47°42'N	141°24'W	79	37
Espin	28°06'N	109°06'E	75	65
Euclides	7°24'S	29°30'W	11	117
Euctemon	76°24'N	31°18'E	62	20
Eudoxus	44°18'N	16°18'E	67	44
Euler	23°18'N	29°12'W	27	77
Evans	9°30'S	133°30'W	67	111
Evdokimov	34°48'N	153°00'W	50	52
Evershed	35°42'N	159°30'W	66	52
Ewen	7°42'N	121°24'E	3	105
Fabbroni	18°42'N	29°12'E	10	80
Fabricius	42°54'S	42°00'E	78	176
Fabry	42°54'N	100°42'E	184	47
Fahrenheit	13°06'N	61°42'E	6	102
Fairouz	26°06'S	102°54'E	3	144
Faraday	42°24'S	8°42'E	69	174
Faustini	87°18'S	77°00'E	39	15
Fauth	6°18'N	20°06'W	12	97
Faye	21°24'S	3°54'E	36	139
Fechner	59°00'S	124°54'E	63	192
Fedorov	28°12'N	37°00'W	6	58
Felix	25°06'N	25°24'W	1	77
Fényi	44°54'S	105°06'W	38	170
Feoktistov	30°54'N	140°42'E	23	67
Fermat	22°36'S	19°48'E	38	140
Fermi	19°18'S	122°36'E	183	145
Fernelius	38°06'S	4°54'E	65	158
Fersman	18°42'N	126°00'W	151	71
Fesenkov	23°12'S	135°06'E	35	146
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Finsen	42°00'S	177°54'W	72	149	Gagarin	20°12'S	149°12'E	265	147	Glauber	11°30'N	142°36'E	15	106
Firmicus	7°18'N	63°24'E	56	102	Galen	21°54'N	5°00'E	10	79	Glazenap	1°36'S	137°36'E	43	126
Firsov	4°30'N	112°12'E	51	105	Galilaei	10°30'N	62°42'W	15	95	Glushko	8°24'N	77°36'W	43	94
Fischer	8°00'N	142°24'E	30	106	Galle	55°54'N	22°18'E	21	44	Goclenius	10°00'S	45°00'E	72	121
Fitzgerald	27°30'N	171°42'W	110	69	Galois	14°12'S	151°54'W	222	130	Goddard	14°48'N	89°00'E	89	83
Fizeau	58°36'S	133°54'W	111	183	Galvani	49°36'N	84°36'W	80	39	Godin	1°48'N	10°12'E	34	99
Flammarion	3°24'S	3°42'W	74	118	Gambart	1°00'N	15°12'W	25	98	Goldschmidt	73°12'N	3°48'W	113	19
Flamsteed	4°30'S	44°18'W	20	116	Gamow	65°18'N	145°18'E	129	34	Golgi	27°48'N	60°00'W	5	75
Fleming	15°00'N	109°36'E	106	85	Ganskiy	9°42'S	97°00'E	43	124	Golitsyn	25°06'S	105°00'W	36	133
Florensky	25°18'N	131°30'E	71	86	Ganswindt	79°36'S	110°18'E	74	200	Golovin	39°54'N	161°06'E	37	68
Florey	86°49'N	17°50'W	54	14	Garavito	47°30'S	156°42'E	74	181	Goodacre	32°42'S	14°06'E	46	158
Focas	33°42'S	93°48'W	22	153	Gardner	17°42'N	33°48'E	18	80	Gore	86°010'N	61°50'W	8	14
Fontana	16°06'S	56°36'W	31	135	Gärtner	59°06'N	34°36'E	115	31	Gould	19°12'S	17°12'W	34	138
Fontenelle	63°24'N	18°54'W	38	29	Gassendi	17°36'S	40°06'W	101	136	Grace	14°12'N	35°54'E	1	80
Foster	23°42'N	141°30'W	33	71	Gaston	30°54'N	34°00'W	2	58	Grachev	3°42'S	108°12'W	35	112
Foucault	50°24'N	39°42'W	23	41	Gaudibert	10°54'S	37°48'E	34	121	Graff	42°24'S	88°36'W	36	170
Fourier	30°18'S	53°00'W	51	155	Gauricus	33°48'S	12°36'W	79	157	Grave	17°06'S	150°18'E	40	147
Fowler	42°18'N	145°00'W	146	37	Gauss	35°42'N	79°00'E	177	63	Greaves	13°12'N	52°42'E	13	101
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Fra Mauro	6°06'S	17°00'W	101	118	Gay-Lussac	13°54'N	20°48'W	26	97	Gregory	2°12'N	127°12'E	67	106
Fracastorius	21°30'S	33°12'E	112	140	Geber	19°24'S	13°54'E	44	139	Grigg	12°54'N	129°24'W	36	91
Franck	22°36'N	35°30'E	12	80	Geiger	14°36'S	158°30'E	34	147	Grignard	84°29'N	75°37'W	12	14
Franklin	38°48'N	47°42'E	56	62	Geissler	2°36'S	76°30'E	16	123	Grimaldi	5°30'S	68°18'W	172	115
Franz	16°36'N	40°12'E	25	81	Geminus	34°30'N	56°42'E	85	62	Grissom	47°00'S	147°24'W	58	168
Fraunhofer	39°30'S	59°06'E	56	160	Gemma Frisius	34°12'S	13°18'E	87	158	Grotrian	66°30'S	128°18'E	37	192
Fredholm	18°24'N	46°30'E	14	81	Gerard	44°30'N	80°00'W	90	40	Grove	40°18'N	32°54'E	28	61
Freud	25°48'N	52°18'W	2	76	Gerasimovich	22°54'S	122°36'W	86	132	Gruemberger	66°54'S	10°00'W	93	187
Freundlich	25°00'N	171°00'E	85	88	Gernsback	36°30'S	99°42'E	48	162	Gruithuisen	32°54'N	39°42'W	15	58
Fridman	12°36'S	126°00'W	102	111	Gibbs	18°24'S	84°18'E	76	143	Guericke	11°30'S	14°06'W	63	118
Froelich	80°18'N	109°42'W	58	17	Gilbert	3°12'S	76°00'E	112	123	Guillaume	45°24'N	173°24'W	57	36
Frost	37°42'N	118°24'W	75	54	Gill	63°54'S	75°54'E	66	190	Gullstrand	45°12'N	129°18'W	43	38
Fryxell	21°18'S	101°24'W	18	133	Ginzel	14°18'N	97°24'E	55	84	Gum	40°24'S	88°36'E	54	162
Furnerius	36°00'S	60°36'E	135	161	Gioja	83°18'N	2°00'E	41	20	Gutenberg	8°36'S	41°12′E	74	121
G. Bond	32°24'N	36°12'E	20	61	Giordano Bruno	35°54'N	102°48'E	22	65	Guthnick	47°42'S	93°54'W	36	170

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Haber	83°25'N	95°19'W	55	17
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Hagen	48°18'S	135°06'E	55	180
Hahn	31°18'N	73°36'E	84	63
Haidinger	39°12'S	25°00'W	22	156
Hainzel	41°18'S	33°30'W	70	156
Haldane	1°42'S	84°06'E	37	123
Hale	74°12'S	90°48'E	83	200
Hall	33°42'N	37°00'E	35	61
Halley	8°00'S	5°42'E	36	119
Hamilton	42°48'S	84°42'E	57	178
Hanno	56°18'S	71°12'E	56	190
Hansen	14°00'N	72°30'E	39	83
Hansteen	11°30'S	52°00'W	44	116
Harden	5°30'N	143°30'E	15	106
Harding	43°30'N	71°42'W	22	40
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Harkhebi	39°36'N	98°18'E	237	64
Harlan	38°30'S	79°30'E	65	161
Harold	10°54'S	6°00'W	2	118
Harpalus	52°36'N	43°24'W	39	41
Harriot	33°06'N	114°18'E	56	65
Hartmann	3°12'N	135°18'E	61	106
Hartwig	6°06'S	80°30'W	79	114
Harvey	19°30'N	146°30'W	60	70
Hase	29°24'S	62°30'E	83	161
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Hatanaka	29°42'N	121°30'W	26	53
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Hédervári	81°48'S	84°00'E	69	199
Hedin	2°00'N	76°30'W	150	94
Heinrich	24°48'N	15°18'W	6	78
Heinsius	39°30'S	17°42'W	64	157
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Helmert	7°36'S	87°36'E	26	123
Helmholtz	68°06'S	64°06'E	94	190
Henderson	4°48'N	152°06'E	47	107
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Henry	24°00'S	56°48'W	41	135
Henry Frères	23°30'S	58°54'W	42	135
Henyey	13°30'N	151°36'W	63	90
Heraclitus	49°12'S	6°12'E	90	174
Hercules	46°42'N	39°06'E	69	45
Herigonius	13°18'S	33°54'W	15	117
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Hipparchus	5°06'S	5°12'E	138	119
Hippocrates	70°42'N	145°54'W	60	16
Hirayama	6°06'S	93°30'E	132	124
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Hommel	54°42'S	33°48'E	126	175
Hooke	41°12'N	54°54'E	36	62
Hopmann	50°48'S	160°18'E	88	181
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Hubble	22°06'N	86°54'E	80	83
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Humboldt	27°00'S	80°54'E	189	143
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Huxley	20°12'N	4°30'W	4	78
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Hypatia	4°18'S	22°36'E	40	120
lan	25°42'N	0°24'W	1	78
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Ibn Firnas	6°48'N	122°18'E	89	105	Jules Verne	35°00'S	147°00'E	143	165	Klaproth	69°48'S	26°00'W	119	187
Ibn Yunus	14°06'N	91°06'E	58	84	Julienne	26°00'N	3°12'E	2	79	Klein	12°00'S	2°36'E	44	119
Ibn-Rushd	11°42'S	21°42'E	32	120	Julius Caesar	9°00'N	15°24'E	90	99	Kleymenov	32°24'S	140°12'W	55	150
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Ideler	49°12'S	22°18'E	38	175	Kamerlingh Onnes	15°00'N	115°48'W	66	72	Knox-Shaw	5°18'N	80°12'E	12	103
Idel'son	81°30'S	110°54'E	60	200	Kane	63°06'N	26°06'E	54	30	Koch	42°48'S	150°06'E	95	180
Il'in	17°48'S	97°30'W	13	133	Kant	10°36'S	20°06'E	33	120	Kocher	84°36'S	134°30'W	21	15
Ina	18°36'N	5°18'E	3	79	Као	6°42'S	87°36'E	34	123	Kohlschütter	14°24'N	154°00'E	53	87
Ingalls	26°24'N	153°06'W	37	70	Kapteyn	10°48'S	70°36'E	49	122	Kolhörster	11°12'N	114°36'W	97	92
Inghirami	47°30'S	68°48'W	91	171	Karima	25°54'S	103°00'E	3	144	Komarov	24°42'N	152°30'E	78	87
Innes	27°48'N	119°12'E	42	85	Karpinskiy	73°18'N	166°18'E	92	23	Kondratyuk	14°54'S	115°30'E	108	145
loffe	14°24'S	129°12'W	86	131	Karrer	52°06'S	141°48'W	51	168	König	24°06'S	24°36'W	23	137
Isabel	28°12'N	34°06'W	1	58	Kasper	8°18'N	122°06'E	12	105	Konoplev	28°30'S	125°30'W	25	151
Isaev	17°30'S	147°30'E	90	147	Kästner	6°48'S	78°30'E	108	123	Konstantinov	19°48'N	158°24'E	66	87
Isidorus	8°00'S	33°30'E	42	120	Katchalsky	5°54'N	116°06'E	32	105	Kopff	17°24'S	89°36'W	41	134
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Ivan	26°54'N	43°18'W	4	76	Kearons	11°24'S	112°36'W	23	112	Kosberg	20°12'S	149°36'E	15	147
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J. Herschel	62°00'N	42°00'W	165	28	Kekulé	16°24'N	138°06'W	94	71	Kovalevskaya	30°48'N	129°36'W	115	53
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Jacobi	56°42'S	11°24'E	68	188	Kepínski	28°48'N	126°36'E	31	66	Kozyrev	46°48'S	129°18'E	65	179
Jansen	13°30'N	28°42'E	23	100	Kepler	8°06'N	38°00'W	31	96	Krafft	16°36'N	72°36'W	51	74
Jansky	8°30'N	89°30'E	72	103	Khvol'son	13°48'S	111°24'E	54	125	Kramarov	2°18'S	98°48'W	20	113
Janssen	45°24'S	40°18'E	199	176	Kibal'chich	3°00'N	146°30'W	92	90	Kramers	53°36'N	127°36'W	61	38
Jarvis	34°54'S	147°30'W	38	150	Kidinnu	35°54'N	122°54'E	56	66	Krasnov	29°54'S	79°36'W	40	154
Jeans	55°48'S	91°24'E	79	178	Kies	26°18'S	22°30'W	45	137	Krasovskiy	3°54'N	175°30'W	59	89
Jehan	20°42'N	31°54'W	5	77	Kiess	6°24'S	84°00'E	63	123	Kreiken	9°00'S	84°36'E	23	123
Jenkins	0°18'N	78°06'E	38	103	Kimura	57°06'S	118°24'E	28	191	Krieger	29°00'N	45°36'W	22	57
Jenner	42°06'S	95°54'E	71	178	Kinau	60°48'S	15°06'E	41	188	Krogh	9°24'N	65°42'E	19	102
Jerik	18°30'N	27°36'E	Ĩ	80	King	5°00'N	120°30'E	76	105	Krusenstern	26°12'S	5°54'E	47	139
Joliot	25°48'N	93°06'E	164	84	Kira	17°36'S	132°48'E	3	146	Krylov	35°36'N	165°48'W	49	51
Jomo	24°24'N	2°24'E	7	79	Kirch	39°12'N	5°36'W	11	59	Kugler	53°48'S	103°42'E	65	178
José	12°42'S	1°36'W	2	118	Kircher	67°06'S	45°18'W	72	186	Kuhn	84°36'S	153°38'W	16	15
Joule	27°18'N	144°12'W	96	70	Kirchhoff	30°18'N	38°48'E	24	61	Kuiper	9°48'S	22°42'W	6	117

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Kunowsky	3°12'N	32°30'W	18	97
Kuo Shou Ching	8°24'N	133°42'W	34	91
Kurchatov	38°18'N	142°06'E	106	67
L. Clark	43°42'S	147°42'W	16	168
La Caille	23°48'S	1°06'E	67	139
La Condamine	53°24'N	28°12'W	37	42
La Pérouse	10°42'S	76°18'E	77	123
Lacchini	41°42'N	107°30'W	58	54
Lacroix	37°54'S	59°00'W	37	155
Lade	1°18'S	10°06'E	55	119
Lagalla	44°36'S	22°30'W	85	173
Lagrange	32°18'S	72°48'W	225	154
Lalande	4°24'S	8°36'W	24	118
Lallemand	14°18'S	84°06'W	18	134
Lamarck	22°54'S	69°48'W	100	135
Lamb	42°54'S	100°06'E	106	178
Lambert	25°48'N	21°00'W	30	77
Lamé	14°42'S	64°30'E	84	142
Lamèch	42°42'N	13°06'E	13	44
Lamont	4°24'N	23°42'E	106	100
Lampland	31°00'S	131°00'E	65	164
Landau	41°36'N	118°06'W	214	54
Lander	15°18'S	131°48'E	40	146
Landsteiner	31°18'N	14°48'W	6	59
Lane	9°30'S	132°00'E	55	126
Langemak	10°18'S	118°42'E	97	125
Langevin	44°18'N	162°42'E	58	50
Langley	51°06'N	86°18'W	59	39
Langmuir	35°42'S	128°24'W	91	151
Langrenus	8°54'S	61°06'E	127	122
Lansberg	0°18'S	26°36'W	38	117
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Lauritsen	27°36'S	96°06'E	52	144
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Lavoisier	38°12'N	81°12'W	70	55
Lawrence	7°24'N	43°12'E	24	101
Le Gentil	74°36'S	75°42'W	128	196
Le Monnier	26°36'N	30°36'E	60	80
Le Verrier	40°18'N	20°36'W	20	58
Leakey	3°12'S	37°24'E	12	121
Leavitt	44°48'S	139°18'W	66	168
Lebedev	47°18'S	107°48'E	102	178
Lebedinskiy	8°18'N	164°18'W	62	89
Lebesgue	5°06'S	89°00'E	11	123
Lee	30°42'S	40°42'W	41	155
Leeuwenhoek	29°18'S	178°42'W	125	149
Legendre	28°54'S	70°12'E	78	161
Lehmann	40°00'S	56°00'W	53	155
Leibnitz	38°18'S	179°12'E	245	166
Lemaître	61°12'S	149°36'W	91	183
Lenard	85°12'N	105°00'W	48	14
Lents	2°48'N	102°06'W	21	93
Leonov	19°00'N	148°12'E	33	87
Lepaute	33°18'S	33°36'W	16	156
Letronne	10°48'S	42°30'W	116	116
Leucippus	29°06'N	116°00'W	56	54
Leuschner	1°48'N	108°48'W	49	92
Levi-Civita	23°42'S	143°24'E	121	146
Lewis	18°30'S	113°48'W	42	132
Lexell	35°48'S	4°12'W	62	157
Ley	42°12'N	154°54'E	79	49
Licetus	47°06'S	6°42'E	74	174
Lichtenberg	31°48'N	67°42'W	20	56
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Lindsay	7°00'S	13°00'E	32	119
Linné	27°42'N	11°48'E	2	79
Liouville	2°36'N	73°30'E	16	103
Lippershey	25°54'S	10°18'W	6	138
Lippmann	56°00'S	114°54'W	160	169
Lipskiy	2°12'S	179°30'W	80	109
Litke	16°48'S	123°06'E	39	145
Littrow	21°30'N	31°24'E	30	80
Lobachevskiy	9°54'N	112°36'E	84	105
Lockyer	46°12'S	36°42'E	34	176
Lodygin	17°42'S	146°48'W	62	130
Loewy	22°42'S	32°48'W	24	137
Lohrmann	0°30'S	67°12'W	30	115
Lohse	13°42'S	60°12'E	41	122
Lomonosov	27°18'N	98°00'E	92	84
Longomontanus	49°36'S	21°48'W	157	173
Lorentz	32°36'N	95°18'W	312	55
Louise	28°30'N	34°12'W	0	58
Louville	44°00'N	46°00'W	36	41
Love	6°18'S	129°00'E	84	126
Lovelace	82°18'N	106°24'W	54	17
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Lowell	12°54'S	103°06'W	66	113
Lubbock	3°54'S	41°48'E	13	121
Lubiniezky	17°48'S	23°48'W	43	137
Lucian	14°18'N	36°42'E	7	81
Lucretius	8°12'S	120°48'W	63	112
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Lyman	64°48'S	163°36'E	84	193	Maunder	14°36'S	93°48'W	55	133	Mezentsev	72°06'N	128°42'W	89	17
Lyot	49°48'S	84°30'E	132	178	Maupertuis	49°36'N	27°18'W	45	42	Michael	25°06'N	0°12'E	4	79
M. Anderson	41°36'S	149°00'W	17	150	Maurolycus	42°00'S	14°00'E	114	158	Michelson	7°12'N	120°42'W	123	92
Mach	18°30'N	149°18'W	180	70	Maury	37°06'N	39°36'E	17	61	Milankovič	77°12'N	168°48'E	101	23
Maclaurin	1°54'S	68°00'E	50	122	Mavis	29°48'N	26°24'W	1	58	Milichius	10°00'N	30°12'W	12	97
Maclear	10°30'N	20°06'E	20	100	Maxwell	30°12'N	98°54'E	107	64	Miller	39°18'S	0°48'E	61	158
MacMillan	24°12'N	7°48'W	7	78	McAdie	2°06'N	92°06'E	45	104	Millikan	46°48'N	121°30'E	98	48
Macrobius	21°18'N	46°00'E	64	81	McAuliffe	33°00'S	148°54'W	19	150	Mills	8°36'N	156°00'E	32	107
Mädler	11°00'S	29°48'E	27	120	McClure	15°18'S	50°18'E	23	141	Milne	31°24'S	112°12'E	272	163
Maestlin	4°54'N	40°36'W	7	96	McCool	41°42'S	146°18'W	21	150	Mineur	25°00'N	161°18'W	73	70
Magelhaens	11°54'S	44°06'E	40	121	McDonald	30°24'N	20°54'W	7	58	Minkowski	56°30'S	146°00'W	113	183
Maginus	50°30'S	6°18'W	194	174	McKellar	15°42'S	170°48'W	51	129	Minnaert	67°48'S	179°36'E	125	193
Main	80°48'N	10°06'E	46	20	McLaughlin	47°06'N	92°54'W	79	39	Mitchell	49°42'N	20°12'E	30	44
Mairan	41°36'N	43°24'W	40	57	McMath	17°18'N	165°36'W	86	69	Mitra	18°00'N	154°42'W	92	70
Maksutov	40°30'S	168°42'W	83	149	McNair	35°42'S	147°18'W	29	150	Möbius	15°48'N	101°12'E	50	84
Malapert	84°54'S	12°54'E	69	15	McNally	22°36'N	127°12'W	47	71	Mohorovičić	19°00'S	165°00'W	51	129
Mallet	45°24'S	54°12'E	58	176	Mechnikov	11°00'S	149°00'W	60	110	Moigno	66°24'N	28°54'E	36	30
Malyy	21°54'N	105°18'E	41	84	Mee	43°42'S	35°18'W	126	173	Moiseev	9°30'N	103°18'E	59	104
Mandel'shtam	5°24'N	162°24'E	197	108	Mees	13°36'N	96°06'W	50	93	Moissan	4°48'N	137°24'E	21	106
Manilius	14°30'N	9°06'E	38	79	Meggers	24°18'N	123°00'E	52	85	Moltke	0°36'S	24°12'E	6	120
Manners	4°36'N	20°00'E	15	100	Meitner	10°30'S	112°42'E	87	125	Monge	19°12'S	47°36'E	36	141
Manuel	24°30'N	11°18'E	0	79	Melissa	8°06'N	121°48'E	18	105	Monira	12°36'S	1°42'W	2	118
Manzinus	67°42'S	26°48'E	98	188	Mendel	48°48'S	109°24'W	138	169	Montanari	45°48'S	20°36'W	76	173
Maraldi	19°24'N	34°54'E	39	80	Mendeleev	5°42'N	140°54'E	313	106	Montgolfier	47°18'N	159°48'W	88	36
Marci	22°36'N	167°00'W	25	69	Menelaus	16°18'N	16°00'E	26	79	Moore	37°24'N	177°30'W	54	51
Marco Polo	15°24'N	2°00'W	28	78	Menzel	3°24'N	36°54'E	3	101	Moretus	70°36'S	5°48'W	111	197
Marconi	9°36'S	145°06'E	73	127	Mercator	29°18'S	26°06'W	46	156	Morley	2°48'S	64°36'E	14	122
Marinus	39°24'S	76°30'E	58	161	Mercurius	46°36'N	66°12'E	67	46	Morozov	5°00'N	127°24'E	42	106
Mariotte	28°30'S	139°06'W	65	151	Merrill	75°12'N	116°18'W	57	17	Morse	22°06'N	175°06'W	77	69
Marius	11°54'N	50°48'W	41	96	Mersenius	21°30'S	49°12'W	84	136	Moseley	20°54'N	90°06'W	90	73
Markov	53°24'N	62°42'W	40	40	Meshcherskiy	12°12'N	125°30'E	65	105	Mösting	0°42'S	5°54'W	24	118
Marth	31°06'S	29°18'W	6	156	Messala	39°12'N	60°30'E	125	63	Mouchez	78°18'N	26°36'W	81	19
Mary	18°54'N	27°24'E	1	80	Messier	1°54'S	47°36'E	11	121	Moulton	61°06'S	97°12'E	49	191
Maskelyne	2°12'N	30°06'E	23	100	Metius	40°18'S	43°18'E	87	160	Müller	7°36'S	2°06'E	22	119

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Nagaoka	19°24'N	154°00'E	46	87
Nansen	80°54'N	95°18'E	104	22
Naonobu	4°36'S	57°48'E	34	122
Nasireddin	41°00'S	0°12'E	52	158
Nasmyth	50°30'S	56°12'W	76	172
Nassau	24°54'S	177°24'E	76	148
Natasha	20°00'N	31°18'W	12	77
Naumann	35°24'N	62°00'W	9	56
Neander	31°18'S	39°54'E	50	159
Nearch	58°30'S	39°06'E	75	189
Necho	5°00'S	123°06'E	30	125
Nefed'ev	81°08'S	135°09'E	40	200
Neison	68°18'N	25°06'E	53	30
Neper	8°30'N	84°36'E	137	103
Nernst	35°18'N	94°48'W	116	55
Neujmin	27°00'S	125°00'E	101	145
Neumayer	71°06'S	70°42'E	76	199
Newcomb	29°54'N	43°48'E	41	62
Newton	76°42'S	16°54'W	78	197
Nicholson	26°12'S	85°06'W	38	134
Nicolai	42°24'S	25°54'E	42	175
Nicollet	21°54'S	12°30'W	15	138
Nielsen	31°48'N	51°48'W	9	57
Niepce	72°42'N	119°06'W	57	17
Nijland	33°00'N	134°06'E	35	66
Nikolaev	35°12'N	151°18'E	41	67
Nishina	44°36'S	170°24'W	65	167
Nobel	15°00'N	101°18'W	48	73
Nobile	85°12'S	53°30'E	73	15
Nobili	0°12'N	75°54'E	42	103
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Oberth	62°24'N	155°24'E	60	35
Obruchev	38°54'S	162°06'E	71	166
O'Day	30°36'S	157°30'E	71	165
Oenopides	57°00'N	64°06'W	67	27
Oersted	43°06'N	47°12'E	42	45
Ohm	18°24'N	113°30'W	64	72
Oken	43°42'S	75°54'E	71	177
Olbers	7°24'N	75°54'W	74	94
Olcott	20°36'N	117°48'E	81	85
Olivier	59°06'N	138°30'E	69	34
Omar Khayyam	58°00'N	102°06'W	70	26
Onizuka	36°12'S	148°54'W	29	150
Opelt	16°18'S	17°30'W	48	138
Oppenheimer	35°12'S	166°18'W	208	149
Oppolzer	1°30'S	0°30'W	40	118
Oresme	42°24'S	169°12'E	76	181
Orlov	25°42'S	175°00'W	81	129
Orontius	40°36'S	4°36'W	105	157
Osama	18°36'N	5°12'E	0	79
Osiris	18°36'N	27°36′E	1	80
Osman	11°00'S	6°12'W	2	118
Ostwald	10°24'N	121°54'E	104	105
Palisa	9°24'S	7°12'W	33	118
Palitzsch	28°00'S	64°30'E	41	142
Pallas	5°30'N	1°36'W	46	98
Palmieri	28°36'S	47°42'W	40	155
Paneth	63°00'N	94°48'W	65	26
Pannekoek	4°12'S	140°30'E	71	126
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Pascal	74°36'N	70°18'W	115	18
Paschen	13°30'S	139°48'W	124	111
Pasteur	11°54'S	104°36'E	224	124
Patricia	25°00'N	0°18'E	5	79
Patsaev	16°42'S	133°24'E	55	146
Pauli	44°30'S	137°30'E	84	180
Pavlov	28°48'S	142°30'E	148	165
Pawsey	44°30'N	145°00'E	60	49
Peary	88°36'N	33°00'E	73	14
Pease	12°30'N	106°06'W	38	93
Peek	2°36'N	86°54'E	12	103
Peirce	18°18'N	53°30'E	18	81
Peirescius	46°30'S	67°36'E	61	177
Pentland	64°36'S	11°30'E	56	188
Perel'man	24°00'S	106°00'E	46	144
Perepelkin	10°00'S	129°00'E	97	126
Perkin	47°12'N	175°54'W	62	36
Perrine	42°30'N	127°48'W	86	38
Petavius	25°06'S	60°24'E	188	142
Petermann	74°12'N	66°18'E	73	21
Peters	68°06'N	29°30'E	15	30
Petit	2°18'N	63°30'E	5	102
Petrie	45°18'N	108°24'E	33	48
Petropavlovskiy	37°12'N	114°48'W	63	54
Petrov	61°24'S	88°00'E	49	190
Pettit	27°30'S	86°36'W	35	134
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Picard	14°36'N	54°42'E	22	82
Piccolomini	29°42'S	32°12'E	87	159
Pickering	2°54'S	7°00'E	15	119
Pictet	43°36'S	7°24'W	62	174
Pikel'ner	47°54'S	123°18'E	47	179
Pilâtre	60°12'S	86°54'W	50	185
Pingré	58°42'S	73°42'W	88	185
Pirquet	20°18'S	139°36'E	65	146
Pitatus	29°54'S	13°30'W	106	157
Pitiscus	50°24'S	30°54'E	82	175
Pizzetti	34°54'S	118°48'E	44	163
Plana	42°12'N	28°12'E	44	44
Planck	57°54'S	136°48'E	314	192
Planté	10°12'S	163°18'E	37	128
Plaskett	82°06'N	174°18'E	109	23
Plato	51°36'N	9°24'W	109	43
Playfair	23°30'S	8°24'E	47	139
Plinius	15°24'N	23°42'E	43	80
Plummer	25°00'S	155°00'W	73	130
Plutarch	24°06'N	79°00'E	68	83
Poczobutt	57°06'N	98°48'W	195	26
Pogson	42°12'S	110°30'E	50	179
Poincaré	56°42'S	163°36'E	319	193
Poinsot	79°30'N	145°42'W	68	16
Poisson	30°24'S	10°36'E	42	158
Polybius	22°24'S	25°36'E	41	140
Polzunov	25°18'N	114°36'E	67	85
Pomortsev	0°42'N	66°54'E	23	102
Poncelet	75°48'N	54°06'W	69	18
Pons	25°18'S	21°30'E	41	140
Pontanus	28°24'S	14°24'E	57	158
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Poynting	18°06'N	133°24'W	128	71
Prager	3°54'S	130°30'E	60	126
Prandtl	60°06'S	141°48'E	91	192
Priestley	57°18'S	108°24'E	52	191
Prinz	25°30'N	44°06'W	46	76
Priscilla	10°54'S	6°12'W	1	118
Proclus	16°06'N	46°48'E	28	81
Proctor	46°24'S	5°06'W	52	174
Protagoras	56°00'N	7°18'E	21	30
Ptolemaeus	9°18'S	1°54'W	164	118
Puiseux	27°48'S	39°00'W	24	136
Pupin	23°48'N	11°00'W	2	78
Purbach	25°30'S	2°18'W	115	138
Purkyně	1°36'S	94°54'E	48	124
Pythagoras	63°30'N	63°00'W	142	27
Pytheas	20°30'N	20°36'W	20	77
Quételet	43°06'N	134°54'W	55	37
Rabbi Levi	34°42'S	23°36'E	81	159
Racah	13°48'S	179°48'W	63	109
Raimond	14°36'N	159°18'W	70	70
Raman	27°00'N	55°06'W	10	75
Ramon	41°36'S	148°06'W	17	150
Ramsay	40°12'S	144°30'E	81	165
Ramsden	32°54'S	31°48'W	24	156
Rankine	3°54'S	71°30'E	8	122
Raspletin	22°30'S	151°48'E	48	147
Ravi	12°30'S	1°54'W	2	118
Rayet	44°42'N	114°30'E	27	48
Rayleigh	29°18'N	89°36'E	114	64
Razumov	39°06'N	114°18'W	70	54
Réaumur	2°24'S	0°42'E	52	119
Recht	9°48'N	124°00'E	20	105

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Regnault	54°06'N	88°00'W	46	39
Reichenbach	30°18'S	48°00'E	71	160
Reimarus	47°42'S	60°18'E	48	177
Reiner	7°00'N	54°54'W	29	95
Reinhold	3°18'N	22°48'W	42	97
Repsold	51°18'N	78°36'W	109	40
Resnik	33°48'S	150°06'W	20	150
Respighi	2°48'N	71°54'E	18	102
Rhaeticus	0°00'N	4°54'E	45	99
Rheita	37°06'S	47°12'E	70	160
Riccioli	3°18'S	74°36'W	139	114
Riccius	36°54'S	26°30'E	71	159
Ricco	75°36'N	176°18'E	65	23
Richards	7°42'N	140°06'E	16	106
Richardson	31°06'N	100°30'E	141	65
Riedel	48°54'S	139°36'W	47	168
Riemann	38°54'N	86°48'E	163	64
Ritchey	11°06'S	8°30'E	24	119
Rittenhouse	74°30'S	106°30'E	26	200
Ritter	2°00'N	19°12'E	29	100
Ritz	15°06'S	92°12'E	51	144
Robert	19°00'N	27°24'E	1	80
Roberts	71°06'N	174°30'W	89	16
Robertson	21°48'N	105°12'W	88	73
Robinson	59°00'N	45°54'W	24	28
Rocca	12°42'S	72°48'W	89	114
Rocco	28°54'N	45°00'W	4	57
Roche	42°18'S	136°30'E	160	180
Romeo	7°30'N	122°36'E	8	105
Römer	25°24'N	36°24'E	39	81
Röntgen	33°00'N	91°24'W	126	55
Rosa	20°18'N	32°18'W	1	77
Rosenberger	55°24'S	43°06'E	95	176
Ross	11°42'N	21°42'E	24	100

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Rosse	17°54'S	35°00'E	11	140	Schiaparelli
Rosseland	41°00'S	131°00'E	75	164	Schickard
Rost	56°24'S	33°42'W	48	186	Schiller
Rothmann	30°48'S	27°42'E	42	159	Schjellerup
Rowland	57°24'N	162°30'W	171	24	Schlesinger
Rozhdestvenskiy	85°12'N	155°24'W	177	14	Schliemann
Rumford	28°48'S	169°48'W	61	149	Schlüter
Runge	2°30'S	86°42'E	38	123	Schmidt
Russell	26°30'N	75°24'W	103	74	Schneller
Ruth	28°42'N	45°06'W	3	57	Schomberger
Rutherford	10°42'N	137°00'E	13	106	Schönfeld
Rutherfurd	60°54'S	12°06'W	48	187	Schorr
Rydberg	46°30'S	96°18'W	49	170	Schrödinger
Ryder	44°30'S	143°12'E	17	180	Schröter
Rynin	47°00'N	103°30'W	75	39	Schubert
Sabatier	13°12'N	79°00'E	10	103	Schumacher
Sabine	1°24'N	20°06'E	30	100	Schuster
Sacrobosco	23°42'S	16°42'E	98	139	Schwabe
Saenger	4°18'N	102°24'E	75	104	Schwarzschild
Šafařík	10°36'N	176°54'E	27	108	Scobee
Saha	1°36'S	102°42'E	99	124	Scoresby
Samir	28°30'N	34°18'W	2	58	Scott
Sampson	29°42'N	16°30'W	1	59	Seares
Sanford	32°36'N	138°54'W	55	53	Secchi
Santbech	20°54'S	44°00'E	64	141	Sechenov
Santos-Dumont	27°42'N	4°48'E	8	79	Seeliger
Sarabhai	24°42'N	21°00'E	7	80	Segers
Sarton	49°18'N	121°06'W	69	38	Segner
Sasserides	39°06'S	9°18'W	90	157	Seidel
Saunder	4°12'S	8°48'E	44	119	Seleucus
Saussure	43°24'S	3°48'W	54	174	Seneca
Scaliger	27°06'S	108°54'E	84	145	Seyfert
Schaeberle	26°12'S	117°12'E	62	145	Shackleton
Scheele	9°24'S	37°48'W	4	116	Shahinaz
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Schjellerup	69°42'N	157°06'E	62	35
Schlesinger	47°24'N	138°36'W	97	37
Schliemann	2°06'S	155°12'E	80	127
Schlüter	5°54'S	83°18'W	89	114
Schmidt	1°00'N	18°48'E	11	100
Schneller	41°48'N	163°36'W	54	51
Schomberger	76°42'S	24°54'E	85	198
Schönfeld	44°48'N	98°06'W	25	39
Schorr	19°30'S	89°42'E	53	143
Schrödinger	75°00'S	132°24'E	312	200
Schröter	2°36'N	7°00'W	35	98
Schubert	2°48'N	81°00'E	54	103
Schumacher	42°24'N	60°42'E	60	46
Schuster	4°12'N	146°30'E	108	107
Schwabe	65°06'N	45°36'E	25	31
Schwarzschild	70°06'N	121°12'E	212	22
Scobee	31°06'S	148°54'W	40	150
Scoresby	77°42'N	14°06'E	55	20
Scott	82°06'S	48°30'E	103	199
Seares	73°30'N	145°48'E	110	23
Secchi	2°24'N	43°30'E	22	101
Sechenov	7°06'S	142°36'W	62	111
Seeliger	2°12'S	3°00'E	8	119
Segers	47°06'N	127°42'E	17	48
Segner	58°54'S	48°18'W	67	186
Seidel	32°48'S	152°12'E	62	165
Seleucus	21°00'N	66°36'W	43	75
Seneca	26°36'N	80°12'E	46	83
Seyfert	29°06'N	114°36'E	110	65
Shackleton	89°54'S	0°00'E	19	15
Shahinaz	7°30'N	122°24'E	15	105
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Shayn	32°36'N	172°30'E	93	68
Sheepshanks	59°12'N	16°54'E	25	30
Sherrington	11°06'S	118°00'E	18	125
Shi Shen	76°00'N	104°06'E	43	22
Shirakatsi	12°06'S	128°36'E	51	126
Shoemaker		88°06'W	44	15
Short	74°36'S	7°18'W	70	197
Shternberg	19°30'N	116°18'W	70	72
Shuckburgh	42°36'N	52°48'E	38	45
Shuleykin	27°06'S	92°30'W	15	133
Siedentopf	22°00'N	135°30'E	61	86
Sierpinski	27°12'S	154°30'E	69	147
Sikorsky	66°06'S	103°12'E	98	191
Silberschlag	6°12'N	12°30'E	13	99
Simpelius	73°00'S	15°12'E	70	198
Sinas	8°48'N	31°36'E	11	100
Sirsalis	12°30'S	60°24'W	42	115
Sisakyan	41°12'N	109°00'E	34	65
Sita	4°36'N	120°48'E	2	105
Sklodowska	18°12'S	95°30'E	127	144
Slipher	49°30'N	160°06'E	69	50
Slocum	3°00'S	89°00'E	13	123
Smith	31°36'S	150°12'W	34	150
Smithson	2°24'N	53°36'E	5	101
Smoluchowski	60°18'N	96°48'W	83	26
Snellius	29°18'S	55°42'E	82	160
Sniadecki	22°30'S	168°54'W	43	129
Soddy	0°24'N	121°48'E	42	105
Somerville	8°18'S	64°54'E	15	122
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Spallanzani	46°18'S	24°42'E	32	175
Spencer Jones	13°18'N	165°36'E	85	108
Spörer	4°18'S	1°48'W	27	118
Spurr	27°54'N	1°12'W	13	78
St. John	10°12'N	150°12'E	68	107
Stadius	10°30'N	13°42'W	69	98
Stark	25°30'S	134°36'E	49	146
Stearns	34°48'N	162°36'E	36	68
Stebbins	64°48'N	141°48'W	131	25
Stefan	46°00'N	108°18'W	125	38
Stein	7°12'N	179°00'E	33	108
Steinheil	48°36'S	46°30'E	67	176
Steklov	36°42'S	104°54'W	36	152
Stella	19°54'N	29°48'E	1	80
Steno	32°48'N	161°48'E	31	68
Sternfeld	19°36'S	141°12'W	100	131
Stetson	39°36'S	118°18'W	64	152
Stevinus	32°30'S	54°12'E	74	160
Stewart	2°12'N	67°00'E	13	102
Stiborius	34°24'S	32°00'E	43	159
Stöfler	41°06'S	6°00'E	126	158
Stokes	52°30'N	88°06'W	51	39
Stoletov	45°06'N	155°12'W	42	37
Stoney	55°18'S	156°06'W	45	167
Störmer	57°18'N	146°18'E	69	34
Strabo	61°54'N	54°18'E	55	31
Stratton	5°48'S	164°36'E	70	128
Street	46°30'S	10°30'W	57	174
Strömgren	21°42'S	132°24'W	61	131
Struve	22°24'N	77°06'W	164	74
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Sumner	37°30'N	108°42'E	50	65
Sundman	10°48'N	91°36'W	40	93
Susan	11°00'S	6°18'W	1	118
Svedberg	81°32'S	64°38'E	14	199
Sverdrup	88°30'S	152°00'W	35	15
Swann	52°00'N	112°42'E	42	48
Swasey	5°30'S	89°42'E	23	123
Swift	19°18'N	53°24'E	10	81
Sylvester	82°42'N	79°36'W	58	18
Szilard	34°00'N	105°42'E	122	65
T. Mayer	15°36'N	29°06'W	33	77
Tacchini	4°54'N	85°48'E	40	103
Tacitus	16°12'S	19°00'E	39	140
Tacquet	16°36'N	19°12'E	7	80
Taizo	24°42'N	2°12'E	6	79
Talbot	2°30'S	85°18'E	11	123
Tamm	4°24'S	146°24'E	38	127
Tannerus	56°24'S	22°00'E	28	188
Taruntius	5°36'N	46°30'E	56	101
Taylor	5°18'S	16°42'E	42	119
Tebbutt	9°36'N	53°36'E	31	101
Teisserenc	32°12'N	135°54'W	62	53
Tempel	3°54'N	11°54'E	45	99
Ten Bruggencate	9°30'S	134°24'E	59	126
Tereshkova	28°24'N	144°18'E	31	67
Tesla	38°30'N	124°42'E	43	66
Thales	61°48'N	50°18'E	31	31
Theaetetus	37°00'N	6°00'E	24	60
Thebit	22°00'S	4°00'W	56	138
Theiler	13°24'N	83°18'E	7	103
Theon Junior	2°18'S	15°48'E	17	119
Theon Senior	0°48'S	15°24'E	18	119
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Tikhomirov	25°12'N	162°00'E	65	87
Tikhov	62°18'N	171°42'E	83	35
Tiling	53°06'S	132°36'W	38	168
Timaeus	62°48'N	0°30'W	32	29
Timiryazev	5°30'S	147°00'W	53	110
Timocharis	26°42'N	13°06'W	33	78
Tiselius	7°00'N	176°30'E	53	108
Tisserand	21°24'N	48°12'E	36	81
Titius	26°48'S	100°42'E	73	144
Titov	28°36'N	150°30'E	31	67
Tolansky	9°30'S	16°00'W	13	118
Torricelli	4°36'S	28°30'E	22	120
Toscanelli	27°56'N	47°37'W	7	76
Townley	3°24'N	63°18'E	18	102
Tralles	28°24'N	52°48'E	43	62
Triesnecker	4°12'N	3°36'E	26	99
Trouvelot	49°18'N	5°48'E	9	43
Trumpler	29°18'N	167°06'E	77	68
Tsander	6°12'N	149°18'W	181	90
Tseraskiy	49°00'S	141°36'E	56	180
Tsinger	56°42'N	175°36'E	44	35
Tsiolkovskiy	21°12'S	128°54'E	185	146
Tsu Chung-Chi	17°18'N	145°06'E	28	87
Tucker	5°36'S	88°12'E	7	123
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Tycho	43°24'S	11°06'W	102	174
Tyndall	34°54'S	117°00'E	18	163
Ukert	7°48'N	1°24'E	23	99
Ulugh Beigh	32°42'N	81°54'W	54	55
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Van Biesbroeck	28°42'N	45°36'W	9	57	Volkov	13°36'S	131°42'E	40	126	Weyl	17°30'N	120°12'W	108	72
Van de Graaff	27°24'S	172°12'E	233	148	Volta	53°54'N	84°24'W	123	39	Whewell	4°12'N	13°42'E	13	99
Van den Bergh	31°18'N	159°06'W	42	52	Volterra	56°48'N	132°12'E	52	34	Whipple	89°07'N	118°14'E	15	14
van den Bos	5°18'S	146°00'E	22	127	von Baeyer	81°38'S	61°20'E	13	199	White	44°36'S	158°18'W	39	167
Van der Waals	43°54'S	119°54'E	104	179	von Behring	7°48'S	71°48'E	38	122	Wichmann	7°30'S	38°06'W	10	116
Van Gent	15°24'N	160°24'E	43	87	von Békésy	51°54'N	126°48'E	96	48	Widmannstätten	6°06'S	85°30'E	46	123
Van Maanen	35°42'N	128°00'E	60	66	von Braun	41°06'N	78°00'W	60	56	Wiechert	84°30'S	165°00'E	41	15
van Rhijn	52°36'N	146°24'E	46	49	Von der Pahlen	24°48'S	132°42'W	56	131	Wiener	40°48'N	146°36'E	120	67
Van Vleck	1°54'S	78°18'E	31	123	Von Kármán	44°48'S	175°54'E	180	181	Wildt	9°00'N	75°48'E	11	103
Van Wijk	62°48'S	118°48'E	32	191	Von Neumann	40°24'N	153°12'E	78	67	Wilhelm	43°24'S	20°24'W	106	173
van't Hoff	62°06'N	131°48'W	92	25	Von Zeipel	42°36'N	141°36'W	83	37	Wilkins	29°24'S	19°36'E	57	158
Vasco da Gama	13°36'N	83°54'W	83	94	Voskresenskiy	28°00'N	88°06'W	49	55	Williams	42°00'N	37°12'E	36	45
Vashakidze	43°36'N	93°18'E	44	47	W. Bond	65°24'N	4°30'E	156	30	Wilsing	21°30'S	155°12'W	73	130
Vavilov	0°48'S	137°54'W	98	111	Walker	26°00'S	162°12'W	32	129	Wilson	69°12'S	42°24'W	69	186
Vega	45°24'S	63°24'E	75	177	Wallace	20°18'N	8°42'W	26	78	Winkler	42°12'N	179°00'W	22	36
Vendelinus	16°24'S	61°36'E	131	142	Wallach	4°54'N	32°18'E	6	100	Winlock	35°36'N	105°36'W	64	54
Vening Meinesz	0°18'S	162°36'E	87	128	Walter	28°00'N	33°48'W	1	58	Winthrop	10°42'S	44°24'W	17	116
Ventris	4°54'S	158°00'E	95	127	Walther	33°06'S	1°00'E	128	158	Wöhler	38°12'S	31°24'E	27	159
Vera	26°18'N	43°42'W	2	76	Wan-Hoo	9°48'S	138°48'W	52	111	Wolf	22°42'S	16°36'W	25	138
Vernadskiy	23°12'N	130°30'E	91	86	Wapowski	82°55'S	53°31'E	11	199	Wollaston	30°36'N	46°54'W	10	57
Verne	24°54'N	25°18'W	2	77	Wargentin	49°36'S	60°12'W	84	171	Woltjer	45°12'N	159°36'W	46	36
Vertregt	19°48'S	171°06'E	187	148	Warner	4°00'S	87°18'E	35	123	Wood	43°00'N	120°48'W	78	38
Very	25°36'N	25°18'E	5	80	Waterman	25°54'S	128°00'E	76	146	Wright	31°36'S	86°36'W	39	153
Vesalius	3°06'S	114°30'E	61	125	Watson	62°36'S	124°30'W	62	183	Wróblewski	24°00'S	152°48'E	21	147
Vestine	33°54'N	93°54'E	96	64	Watt	49°30'S	48°36'E	66	176	Wrottesley	23°54'S	56°48'E	57	142
Vetchinkin	10°12'N	131°18'E	98	106	Watts	8°54'N	46°18'E	15	101	Wurzelbauer	33°54'S	15°54'W	88	157
Vieta	29°12'S	56°18'W	87	155	Webb	0°54'S	60°00'E	21	122	Wyld	1°24'S	98°06'E	93	124
Vil'ev	6°06'S	144°24'E	45	127	Weber	50°24'N	123°24'W	42	38	Xenophanes	57°30'N	82°00'W	125	27
Virchow	9°48'N	83°42'E	16	103	Wegener	45°12'N	113°18'W	88	38	Xenophon	22°48'S	122°06'E	25	145
Virtanen	15°30'N	176°42'E	44	88	Weierstrass	1°18'S	77°12'E	33	123	Yablochkov	60°54'N	128°18'E	99	34
Vitello	30°24'S	37°30'W	42	156	Weigel	58°12'S	38°48'W	35	186	Yakovkin	54°30'S	78°48'W	37	171
Vitruvius	17°36'N	31°18'E	29	80	Weinek	27°30'S	37°00'E	32	141	Yamamoto	58°06'N	160°54'E	76	35
Viviani	5°12'N	117°06'E	26	105	Weiss	31°48'S	19°30'W	66	157	Yangel'	17°00'N	4°42'E	8	79
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Young	41°30'S	50°54'E	71	160
Zach	60°54'S	5°18'E	70	188
Zagut	32°00'S	22°06'E	84	159
Zähringer	5°36'N	40°12'E	11	101
Zanstra	2°54'N	124°42'E	42	105
Zasyadko	3°54'N	94°12'E	11	104
Zeeman	75°12'S	133°36'W	190	195
Zelinskiy	28°54'S	166°48'E	53	166
Zeno	45°12'N	72°54'E	65	46
Zernike	18°24'N	168°12'E	48	88
Zhang Yuzhe	69°12'S	137°43'W	36	183
Zhiritskiy	24°48'S	120°18'E	35	145
Zhukovskiy	7°48'N	167°00'W	81	89
Zinner	26°36'N	58°48'W	4	75
Zöllner	8°00'S	18°54'E	47	120
Zsigmondy	59°42'N	104°42'W	65	26
Zucchius	61°24'S	50°18'W	64	186
Zupus	17°12'S	52°18'W	38	136
Zwicky	15°24'S	168°06'E	150	148
	Rupes, Ru	pēs		
Rupes Altai	24°18'S	22°36'E	427	140
Rupes Boris	30°30'N	33°30'W	4	58
Rupes Cauchy	9°00'N	37°00'E	120	101
Rupes Kelvin	27°18'S	33°06'W	78	137
Rupes Liebig	25°00'S	46°00'W	180	136
Rupes Mercator	31°00'S	22°18'W	93	156
Rupes Recta	22°06'S	7°48'W	134	138
Rupes Toscanelli	27°24'N	47°30'W	70	76
	Catena, Cat	enae		
Catena Abulfeda	16°54'S	17°12'E	219	139
Catena Artamonov	26°00'N	105°54'E	134	84
Catena Brigitte	18°30'N	27°30'E	5	80
Catena Davy	11°00'S	7°00'W	50	118
Catena Dziewulski	19°00'N	100°00'E	80	84

Name	Lat.	Long.	Size	Page
Catena Gregory	0°36'S	129°54'E	152	126
Catena Humboldt	21°30'S	84°36'E	165	143
Catena Krafft	15°00'N	72°00'W	60	74
Catena Kurchatov	37°12'N	136°18'E	226	66
Catena Leuschner	4°42'N	110°06'W	364	92
Catena Littrow	22°12'N	29°30'E	10	80
Catena Lucretius	3°24'S	126°06'W	271	111
Catena Mendeleev	6°18'N	139°24'E	188	106
Catena Michelson	1°24'N	113°24'W	456	92
Catena Pierre	19°48'N	31°48'W	9	77
Catena Sumner	37°18'N	112°18'E	247	65
Catena Sylvester	81°24'N	86°12'W	173	18
Catena Taruntius	3°00'N	48°00'E	100	101
Catena Timocharis	29°00'N	13°00'W	50	59
Catena Yuri	24°24'N	30°24'W	5	77
	Vallis, Val	les		
Vallis Alpes	48°30'N	3°12'E	166	43
Vallis Baade	45°54'S	76°12'W	203	171
Vallis Bohr	12°24'N	86°36'W	80	94
Vallis Bouvard	38°18'S	83°06'W	284	153
Vallis Capella	7°36'S	34°54'E	49	120
Vallis Christel	24°30'N	11°00'E	2	79
Vallis Inghirami	43°48'S	72°12'W	148	171
Vallis Krishna	24°30'N	11°18'E	3	79
Vallis Palitzsch	26°24'S	64°18'E	132	142
Vallis Planck	58°24'S	126°06'E	451	192
Vallis Rheita	42°30'S	51°30'E	445	176
Vallis Schrödinger	67°00'S	105°00'E	310	191
Vallis Schröteri	26°12'N	50°48'W	168	76
Vallis Snellius	31°06'S	56°00'E	592	160
Prom	ontorium, P	romontoria		
Promontorium Agarum	14°00'N	66°00'E	70	82
Promontorium Agassiz	42°00'N	1°48'E	20	43
Promontorium Archerusia	16°42'N	22°00'E	10	80

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Promontorium Deville	43°12'N	1°00'E	20	43
Promontorium Fresnel	29°00'N	4°42'E	20	60
Promontorium Heraclides	40°18'N	33°12'W	50	58
Promontorium Kelvin	27°00'S	33°00'W	50	137
Promontorium Laplace	46°00'N	25°48'W	50	42
Promontorium Taenarium	19°00'S	8°00'W	70	138
	Rima, Rin	nae		
Rima Agatharchides	20°00'S	28°00'W	50	137
Rima Agricola	29°00'N	53°00'W	110	57
Rima Archytas	53°00'N	3°00'E	90	43
Rima Ariadaeus	6°24'N	14°00'E	250	99
Rima Artsimovich	27°00'N	39°00'W	70	76
Rima Billy	15°00'S	48°00'W	70	136
Rima Birt	21°00'S	9°00'W	50	138
Rima Bradley	23°48'N	1°12'W	161	78
Rima Brayley	21°24'N	37°30'W	311	76
Rima Calippus	37°00'N	13°00'E	40	60
Rima Cardanus	11°24'N	71°30'W	175	95
Rima Carmen	19°48'N	29°18'E	10	80
Rima Cauchy	10°30'N	38°00'E	140	101
Rima Cleomedes	27°00'N	57°00'E	80	82
Rima Cleopatra	30°00'N	53°48'W	14	57
Rima Conon	18°36'N	2°00'E	30	79
Rima Dawes	17°30'N	26°36'E	15	80
Rima Delisle	31°00'N	32°00'W	60	58
Rima Diophantus	29°00'N	33°00'W	150	58
Rima Draper	18°00'N	25°00'W	160	77
Rima Euler	21°00'N	31°00'W	90	77
Rima Flammarion	2°48'S	5°36'W	80	118
Rima Furnerius	35°00'S	61°00'E	50	161
Rima G. Bond	33°18'N	35°30'E	168	61
Rima Galilaei	11°54'N	58°30'W	89	95
Rima Gärtner	59°00'N	36°00'E	30	31
Rima Gay-Lussac	13°00'N	22°00'W	40	97

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Rima Hadley	25°00'N	3°00'E	80	79
Rima Hansteen	12°00'S	53°00'W	25	116
Rima Hesiodus	30°00'S	20°00'W	256	156
Rima Hyginus	7°24'N	7°48'E	219	99
Rima Jansen	14°30'N	29°00'E	35	80
Rima Krieger	29°00'N	45°36'W	22	57
Rima Mairan	38°00'N	47°00'W	90	57
Rima Marcello	18°36'N	27°42'E	2	80
Rima Marius	16°30'N	48°54'W	121	76
Rima Messier	1°00'S	45°00'E	100	121
Rima Milichius	8°00'N	33°00'W	100	97
Rima Oppolzer	1°42'S	1°00'E	94	119
Rima Réaumur	3°00'S	3°00'E	30	119
Rima Reiko	18°36'N	27°42'E	2	80
Rima Rudolf	19°36'N	29°36'E	8	80
Rima Schröter	1°00'N	6°00'W	40	98
Rima Sharp	46°42'N	50°30'W	107	41
Rima Sheepshanks	58°00'N	24°00'E	200	30
Rima Siegfried	25°54'S	103°00'E	14	144
Rima Suess	6°42'N	48°12'W	165	96
Rima Sung-Mei	24°36'N	11°18'E	4	79
Rima T. Mayer	13°00'N	31°00'W	50	97
Rima Vladimir	25°12'N	0°42'W	14	78
Rima Wan-Yu	20°00'N	31°30'W	12	77
Rima Yangel'	16°42'N	4°36'E	30	79
Rima Zahia	25°00'N	29°30'W	16	77
Rimae Alphonsus	14°00'S	2°00'W	80	118
Rimae Apollonius	5°00'N	53°00'E	230	101
Rimae Archimedes	26°36'N	4°06'W	169	78
Rimae Aristarchus	26°54'N	47°30'W	121	76
Rimae Arzachel	18°00'S	2°00'W	50	138
Rimae Atlas	47°30'N	43°36'E	60	45
Rimae Bode	10°00'N	4°00'W	70	98
Rimae Boscovich	9°48'N	11°06'E	40	99
Rimae Bürg	44°30'N	23°48'E	147	44

Name	Lat.	Long.	Size	Page
Rimae Chacornac	29°00'N	32°00'E	120	61
Rimae Daniell	37°00'N	26°00'E	200	61
Rimae Darwin	19°18'S	69°30'W	143	135
Rimae de Gasparis	24°36'S	51°06'W	93	136
Rimae Doppelmayer	25°54'S	45°06'W	162	136
Rimae Focas	28°00'S	98°00'W	100	153
Rimae Fresnel	28°00'N	4°00'E	90	60
Rimae Gassendi	18°00'S	40°00'W	70	136
Rimae Gerard	46°00'N	84°00'W	100	39
Rimae Goclenius	8°00'S	43°00'E	240	121
Rimae Grimaldi	9°00'S	64°00'W	230	115
Rimae Gutenberg	5°00'S	38°00'E	330	121
Rimae Hase	29°24'S	62°30'E	83	161
Rimae Herigonius	13°00'S	37°00'W	100	116
Rimae Hevelius	1°00'N	68°00'W	182	95
Rimae Hippalus	25°30'S	29°12'W	191	137
Rimae Hypatia	0°24'S	22°24'E	206	120
Rimae Janssen	45°36'S	40°00'E	114	176
Rimae Kopff	17°24'S	89°36'W	41	134
Rimae Littrow	22°06'N	29°54'E	115	80
Rimae Maclear	13°00'N	20°00'E	110	100
Rimae Maestlin	2°00'N	40°00'W	80	96
Rimae Maupertuis	52°00'N	23°00'W	60	42
Rimae Menelaus	17°12'N	17°54'E	131	79
Rimae Mersenius	20°00'S	46°30'W	300	136
Rimae Opelt	13°00'S	18°00'W	70	117
Rimae Palmieri	28°00'S	47°00'W	150	136
Rimae Parry	6°06'S	16°48'W	82	118
Rimae Petavius	25°54'S	58°54'E	80	142
Rimae Pettit	23°00'S	92°00'W	450	133
Rimae Pitatus	28°30'S	13°48'W	94	157
Rimae Plato	52°54'N	3°12'W	87	43
Rimae Plinius	17°54'N	23°36'E	124	80
Rimae Posidonius	32°00'N	28°42'E	70	61
Rimae Prinz	27°00'N	43°00'W	80	76

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Rimae Ramsden	33°54'S	31°24'W	108	156
Rimae Repsold	50°36'N	81°42'W	166	40
Rimae Riccioli	2°00'S	74°00'W	400	114
Rimae Ritter	3°00'N	18°00'E	100	99
Rimae Römer	27°00'N	35°00'E	110	80
Rimae Secchi	1°00'N	44°00'E	35	101
Rimae Sirsalis	15°42'S	61°42'W	426	135
Rimae Sosigenes	8°36'N	18°42'E	190	100
Rimae Sulpicius Gallus	21°00'N	10°00'E	90	79
Rimae Taruntius	5°30'N	46°30'E	25	101
Rimae Theaetetus	33°00'N	6°00'E	50	60
Rimae Triesnecker	4°18'N	4°36'E	215	99
Rimae Vasco da Gama	10°00'N	82°00'W	60	94
Rimae Zupus	15°00'S	53°00'W	120	136
	Sinus, Sir	านิร		
Sinus Aestuum	10°54'N	8°48'W	290	98
Sinus Amoris	18°06'N	39°06'E	130	81
Sinus Asperitatis	3°48'S	27°24'E	206	120
Sinus Concordiae	10°48'N	43°12'E	142	101
Sinus Fidei	18°00'N	2°00'E	70	79
Sinus Honoris	11°42'N	18°06'E	109	100
Sinus Iridum	44°06'N	31°30'W	236	42
Sinus Lunicus	31°48'N	1°24'W	126	59
Sinus Medii	2°24'N	1°42'E	335	99
Sinus Roris	54°00'N	56°36'W	202	41
Sinus Successus	0°54'N	59°00'E	132	102
	Palus, Palu	udes		
Palus Epidemiarum	32°00'S	28°12'W	286	156
Palus Putredinis	26°30'N	0°24'E	161	79
Palus Somni	14°06'N	45°00'E	143	81
	Albedo Fea	ature		
Reiner Gamma	7°30'N	59°00'W	70	95
	Landing Site	Name		
Apennine Front	25°54'N	3°42'E	6	79
Baby Ray	9°06'S	15°24'E	0	119

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Bear Mountain	20°00'N	30°42'E	0	80
Bench	3°12'S	23°24'W	0	117
Block	3°12'S	23°24'W	0	117
Bowen-Apollo	20°18'N	30°54'E	0	80
Bridge	26°00'N	3°36'E	1	79
Brontë	20°12'N	30°42'E	0	80
Camelot	20°12'N	30°42'E	1	80
Cinco	9°06'S	15°30'E	0	119
Cochise	20°12'N	30°48'E	1	80
Cone	3°42'S	17°24'W	0	118
Crescent	2°54'S	23°24'W	1	117
Doublet	3°42'S	17°30'W	0	118
Dune	26°00'N	3°42'E	0	79
Earthlight	26°06'N	3°42'E	0	79
Elbow	26°00'N	3°36'E	0	79
Emory	20°06'N	30°48'E	1	80
End	8°54'S	15°36'E	0	119
Falcon	20°24'N	30°18'E	0	80
Family Mountain	20°24'N	30°18'E	7	80
Flag	9°00'S	15°30'E	0	119
Flank	3°42'S	17°24'W	0	118
Gator	9°00'S	15°36'E	1	119
Halfway	9°00'S	15°30'E	0	119
Halo	3°12'S	23°24'W	0	117
Head	3°00'S	23°24'W	0	117
Hess-Apollo	20°06'N	30°42'E	1	80
Horatio	20°12'N	30°42'E	0	80
Index	26°06'N	3°42'E	0	79
Kiva	8°36'S	15°30'E	1	119
Lara	20°24'N	30°30'E	0	80
Last	26°06'N	3°42'E	0	79
Light Mantle	20°12'N	30°48'E	4	80
Mackin	20°06'N	30°42'E	0	80
Middle Crescent	3°12'S	23°24'W	0	117
Nansen-Apollo	20°06'N	30°30'E	1	80

Name	Lat.	Long.	Size	Page
North Complex	26°12'N	3°36'E	2	79
North Massif	20°24'N	30°48'E	14	80
North Ray	8°48'S	15°30'E	1	119
Old Nameless	3°42'S	17°30'W	0	118
Palmetto	8°54'S	15°30'E	0	119
Plain	26°12'N	3°36'E	2	79
Plum	9°00'S	15°30'E	0	119
Powell	20°12'N	30°48'E	1	80
Ravine	8°54'S	15°36'E	1	119
Rhysling	26°06'N	3°42'E	0	79
Scarp	20°18'N	30°36'E	8	80
Sculptured Hills	20°18'N	31°00'E	8	80
Shakespeare	20°12'N	30°48'E	1	80
Sharp-Apollo	3°12'S	23°24'W	0	117
Sherlock	20°12'N	30°48'E	0	80
Shorty	20°12'N	30°36'E	0	80
Smoky Mountains	8°48'S	15°36'E	3	119
Snowman	3°12'S	23°24'W	1	117
South Cluster	26°00'N	3°42'E	2	79
South Massif	20°00'N	30°24'E	16	80
South Ray	9°12'S	15°24'E	1	119
Spook	9°00'S	15°30'E	0	119
Spot	9°00'S	15°30'E	0	119
Spur	25°54'N	3°42'E	0	79
St. George	26°00'N	3°30'E	2	79
Statio Tranquillitatis	0°48'N	23°30'E	0	100
Steno-Apollo	20°06'N	30°48'E	1	80
Stone Mountain	9°06'S	15°36'E	5	119
Stubby	9°06'S	15°30'E	1	119
Surveyor	3°12'S	23°24'W	0	117
Taurus-Littrow Valley	20°00'N	31°00'E	30	80
Terrace	26°06'N	3°42'E	0	79
Tortilla Flat	20°12'N	30°42'E	1	80
Trap	9°06'S	15°24'E	1	119
Trident	20°12'N	30°48'E	0	80

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Triplet	3°42'S	17°30'W	0	118
Van Serg	20°12'N	30°48'E	0	80
Victory	20°12'N	30°42'E	1	80
Weird	3°42'S	17°30'W	0	118
Wessex Cleft	20°18'N	30°54'E	4	80
West	0°48'N	23°30'E	0	100
Wreck	9°06'S	15°30'E	1	119
	Satellite Fe	ature		
Abbe H	58°12'S	177°54'E	25	193
Abbe K	59°36'S	177°18'E	28	193
Abbe M	61°36'S	175°30'E	29	193
Abel B	36°42'S	82°48'E	41	162
Abel C	36°0'S	81°0'E	31	162
Abel L	34°24'S	82°36'E	67	162
Abel M	32°12'S	83°36'E	81	162
Abulfeda D	13°12'S	9°30'E	20	119
Adams B	31°30'S	65°36'E	28	161
Adams D	32°30'S	71°36'E	42	161
Adams P	35°12'S	71°0'E	24	161
Agatharchides A	23°12'S	28°24'W	16	137
Agrippa S	5°18'N	8°54'E	32	99
Airy B	17°36'S	8°30'E	29	139
Aitken C	14°0'S	175°48'E	74	128
Aitken Y	12°0'S	173°12'E	35	128
Aitken Z	15°6'S	173°18'E	33	148
Albategnius B	10°0'S	4°0'E	20	119
Albategnius E	12°54'S	6°24'E	14	119
Alden B	20°30'S	112°36'E	17	145
Alden E	23°12'S	112°24'E	28	145
Alekhin E	67°12'S	124°6'W	38	183
Alhazen A	16°12'N	74°18'E	14	83
Alhazen D	19°42'N	75°12'E	33	83
Al-Khwarizmi B	9°0'N	107°24'E	62	104
Al-Khwarizmi H	6°0'N	109°12'E	50	105
Al-Khwarizmi J	6°12'N	107°36'E	47	105

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Al-Khwarizmi K	4°36'N	107°36'E	26	105	Babbage A	59°0'N	55°6'W	32	28	Bečvář J	3°36'S	126°36'E	45	126
Alpes A	51°24'N	0°18'W	11	43	Babbage D	58°36'N	61°0'W	68	27	Bečvář Q	2°54'S	124°0'E	28	125
Alter K	16°18'N	106°0'W	22	73	Babcock H	3°0'N	96°30'E	63	104	Bečvář X	0°36'S	124°12'E	26	125
Alter W	20°24'N	109°12'W	52	72	Backlund L	18°12'S	103°30'E	56	144	Behaim S	16°36'S	81°24'E	25	143
Amici N	11°48'S	172°30'W	39	109	Backlund P	18°54'S	102°0'E	27	144	Beijerinck D	12°48'S	153°6'E	14	127
Amici P	12°18'S	174°6'W	31	109	Baco A	52°48'S	20°12'E	39	175	Beijerinck J	14°48'S	153°42'E	40	147
Amici Q	12°0'S	175°42'W	47	109	Васо К	53°54'S	17°36'E	29	175	Beijerinck R	14°42'S	149°12'E	28	147
Amici R	11°24'S	175°12'W	34	109	Baco L	49°30'S	16°42'E	7	175	Beijerinck U	12°24'S	149°0'E	18	127
Amici T	9°42'S	174°0'W	43	109	Baillaud A	75°42'N	48°48'E	56	21	Bel'kovich A	58°42'N	86°0'E	58	32
Amici U	8°42'S	175°30'W	96	109	Baillaud D	73°36'N	49°42'E	16	185	Bel'kovich K	63°48'N	93°36'E	47	33
Anaximander B	67°48'N	60°42'W	78	27	Baillaud F	75°42'N	53°42'E	20	21	Bell J	19°54'N	94°0'W	18	73
Anaximander D	65°24'N	50°6'W	92	28	Bailly B	68°48'S	63°6'W	65	185	Bell K	18°18'N	95°6'W	18	73
Anderson E	16°54'N	173°24'E	28	88	Bailly F	67°30'S	69°12'W	16	185	Bell L	19°42'N	95°48'W	23	73
Anderson F	16°18'N	173°36'E	49	88	Bailly G	65°36'S	59°6'W	18	186	Bell Q	20°42'N	97°12'W	23	73
Anderson L	14°36'N	170°54'E	14	88	Bailly O	69°36'S	56°42'W	16	186	Bell T	21°54'N	98°54'W	52	73
Ansgarius B	11°54'S	83°48'E	29	123	Bailly U	71°18'S	75°48'W	20	196	Bell Y	25°24'N	96°42'W	23	73
Anuchin B	46°42'S	103°18'E	24	178	Balboa A	17°24'N	81°54'W	47	74	Belyaev Q	20°36'N	139°24'E	50	86
Anuchin L	50°12'S	101°42'E	15	178	Balboa B	20°18'N	82°18'W	62	74	Bergstrand G	20°0'S	179°24'E	34	148
Anuchin N	51°36'S	99°36'E	33	178	Ball A	34°42'S	9°18'W	29	157	Bergstrand Q	20°6'S	175°6'E	59	148
Anuchin Q	51°6'S	98°18'E	50	178	Ball C	37°42'S	8°42'W	31	157	Berkner A	27°36'N	104°48'W	22	73
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Arnold F	67°30'N	35°12'E	10	31	Barocius J	44°54'S	21°30'E	27	175	Berzelius B	32°36'N	43°6'E	23	62
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Atlas P	49°36'N	52°42'E	27	45	Bayer H	53°30'S	32°30'W	27	173	Bettinus B	63°36'S	51°0'W	24	186
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Icarus X	2°12'S	175°30'W	43	109	Jules Verne C	33°12'S	149°42'E	30	165	Kies A	28°18'S	22°42'W	16	156
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Ingalls M	24°0'N	153°0'W	27	70	Jules Verne P	38°0'S	145°6'E	62	165	King J	3°12'N	121°48'E	14	105
Ingalls U	27°18'N	156°12'W	28	70	Jules Verne R	36°54'S	140°54'E	49	165	King Y	6°30'N	119°48'E	48	105
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Ingalls Y	29°42'N	154°6'W	23	52	Jules Verne Z	32°30'S	146°48'E	20	165	Kirkwood Y	72°12'N	157°30'W	19	16
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Isidorus D	4°12'S	34°6'E	15	120	Kästner C	8°0'S	76°54'E	19	123	Korolev B	3°54'S	156°6'W	22	110
Isidorus E	5°18'S	32°36'E	15	120	Kästner E	8°6'S	77°36'E	10	123	Korolev C	1°18'S	153°12'W	68	110
Isidorus F	8°42'S	34°12'E	20	120	Kästner R	6°54'S	82°18'E	17	123	Korolev D	0°48'S	151°30'W	26	110
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Michelson H	4°36'N	116°48'W	35	92	Moseley D	22°54'N	87°36'W	17	74	Nijland V	34°30'N	131°36'E	35	66
Michelson V	8°0'N	124°24'W	20	92	Moulton H	61°30'S	100°36'E	44	191	Nikolaev J	31°42'N	155°30'E	18	67
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O'Day T	30°24'S	154°24'E	24	165	Paraskevopoulos X	53°36'N	152°12'W	26	37	Pentland C	65°0'S	16°18'E	37	188
Oken A	43°12'S	71°18'E	36	177	Paraskevopoulos Y	53°6'N	150°24'W	46	37	Pentland D	63°12'S	14°6'E	35	188
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Sinas E	9°42'N	31°0'E	9	100	Stetson G	39°54'S	117°12'W	23	152	Taruntius H	0°18'N	49°54'E	8	101
Sirsalis A	12°42'S	61°18'W	49	115	Stevinus D	34°48'S	50°54'E	22	160	Taruntius X	7°42'N	53°0'E	23	101
Sirsalis B	11°6'S	63°42'W	16	115	Stiborius A	36°54'S	35°30'E	32	159	Taylor A	4°12'S	15°24'E	38	119
Sirsalis C	10°18'S	63°48'W	22	115	Stöfler D	43°48'S	4°18'E	54	174	Teisserenc C	33°6'N	134°42'W	47	53
Sirsalis J	13°24'S	59°48'W	12	115	Stöfler H	40°18'S	1°42'E	27	158	Teisserenc P	30°6'N	137°6'W	25	53
Sisakyan E	41°24'N	110°42'E	19	65	Stöfler J	42°12'S	2°24'E	76	174	Teisserenc Q	31°6'N	137°18'W	30	53
Sklodowska A	14°42'S	96°30'E	44	144	Stoletov C	46°18'N	153°36'W	36	37	Ten Bruggencate D	8°6'S	136°54'E	43	126
Sklodowska Y	13°12'S	95°24'E	17	124	Störmer C	58°18'N	150°36'E	61	35	Ten Bruggencate H	10°0'S	135°36'E	33	126
Slipher S	49°12'N	158°42'E	26	50	Störmer H	54°48'N	150°12'E	32	49	Ten Bruggencate Y	6°42'S	134°0'E	57	126
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Soddy Q	0°30'S	120°12'E	24	125	Strabo L	64°12'N	53°24'E	26	31	Thiessen Q	73°54'N	174°36'W	39	16
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South B	57°30'N	44°54'W	14	28	Strömgren A	17°48'S	131°42'W	51	131	Tikhomirov J	20°54'N	165°42'E	29	88
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Spencer Jones J	9°42'N	168°0'E	12	108	Struve B	19°0'N	77°0'W	14	74	Tikhomirov R	24°6'N	160°18'E	21	87
Spencer Jones K	10°24'N	167°0'E	29	108	Struve C	22°54'N	75°18'W	11	74	Tikhomirov T	25°24'N	158°48'E	26	87
Spencer Jones W	15°12'N	163°18'E	50	88	Struve G	23°54'N	73°54'W	14	74	Tikhomirov X	27°18'N	160°36'E	24	87
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